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JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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THE SIXTY-SIXTH ANNUAL CONVENTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN CHICAGO DURING THE WEEK BEGINNING AUGUST 12, 1918.

The American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will convene in Chicago, August 12 and 13, 1918.

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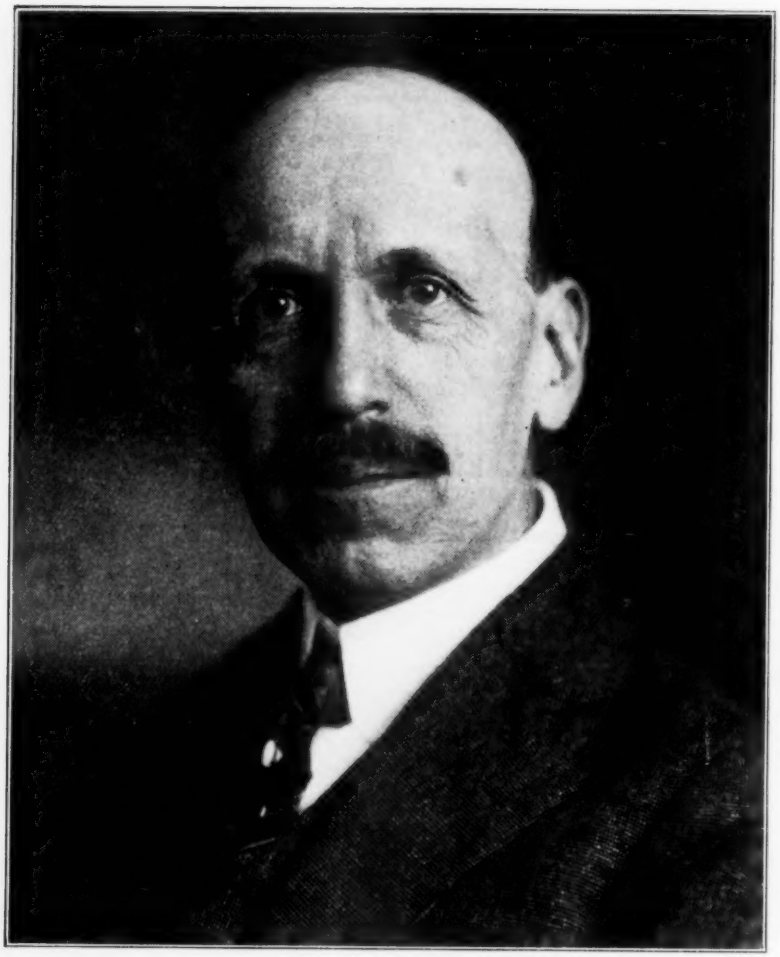

HENRY KRAEMER

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. VII JULY, 1918 NO. 7

HENRY KRAEMER.

Henry Kraemer, president of the American Conference of Pharmaceutical Faculties for 1917–1918, was born in Philadelphia, Pa., July 22, 1868, the only son of John H. and Caroline Kraemer, both of whom died before Henry was four years old. At the age of nine years he was admitted as a pupil of Girard College from which institution he graduated in 1883, receiving the award of scholarship. His attachment for the College is disclosed in a number of contributions published in the *Girard College Record*, and the high esteem in which he is held by his *Alma Mater* is confirmed by expressions of the faculty, officials and alumni, and by his selection as one of the speakers on Founder's Day and other occasions that mark events of this great institution.

While serving his apprenticeship, in the store of Prof. C. B. Lowe, he attended the Philadelphia College of Pharmacy and graduated in 1889. The subject of his thesis was "A Microscopical and Chemical Study of White Oak Bark;" in recognition of this work he was awarded the John M. Maisch microscope prize and also the Henry C. Lea prize. During his senior year at the College he was assistant to Prof. Samuel P. Sadtler at the University of Pennsylvania, and the year after his graduation in pharmacy he was appointed instructor in botany and pharmacognosy in the New York College of Pharmacy. While residing in New York he took a special course in botany at Barnard College, Columbia University, under Dr. Emily L. Gregory.

In 1891 he matriculated in the School of Mines, Columbia University, graduating in 1895 with the degree of Bachelor of Philosophy. This same year he was appointed professor of botany, pharmacognosy and materia medica in the School of Pharmacy of Northwestern University; he was, however, granted one year's leave of absence before entering on his duties. This year was spent at the University of Marburg, Germany, most of the time being devoted to the study of botany under Prof. Dr. Arthur Meyer. He also attended the lectures on philosophy by Professor Cohen; on chemistry by Professor Zincke, and those on physics by Professor Melde. He was granted the degree of Doctor of Philosophy after passing the required examinations and he gained the distinction of *cum laude*. His inaugural dissertation, presented to the Philosophical Faculty of the University, was on "*Viola tricolor* L., *in morphologischer, anatomischer und biologischer Beziehung*."

After returning to the United States Professor Kraemer assumed the duties at Northwestern University where he remained one year when he was elected

to the chair of botany and pharmacognosy in the Philadelphia College of Pharmacy, a position he continued to hold until last year when he accepted the chair made vacant by the decease of Prof. J. O. Schlotterbeck in the University of Michigan.

A sketch of Professor Kraemer in the *American Journal of Pharmacy* (1908) has been drawn upon for these data and therein some of his other activities are listed: Member of the Revision Committee of the U. S. Pharmacopoeia from 1900, chairman of its sub-committee on botany and pharmacognosy; instructor in microscopical botany in the summer course in botany given by the Torrey Botanical Club and the College of Pharmacy of the City of New York, 1890–92; chairman of the Committee on Field Meetings of the Torrey Botanical Club, 1891–92; instructor in botany in the Natural History Camp for Boys under the direction of the Worcester Natural History Society, at Wigwam Hill, 1892; editor of the *Alumni Journal*, New York College of Pharmacy, 1894–95; editor of the *American Journal of Pharmacy*, 1899–1917; Reporter on the Progress of Pharmacy, A. Ph. A., 1892–95; collaborator on *Pharmaceutical Review;* member of the scientific staff of the Marine Biological Laboratory at Wood's Hole, Mass.

Among his affiliations the following are named: Life member of the International Botanical Society, Botanical Society of America, the American Philosophical Society, the American Association for the Advancement of Science, the Philadelphia Academy of Natural Sciences, the American Pharmaceutical Association, Columbia University Club, Philadelphia College of Pharmacy, American Society for Extension of University Teaching, Wild Flower Preservation Society of America and a number of alumni associations, also member of numerous other organizations.

Membership in some of these societies referred to may with some individuals indicate only eligibility, but Professor Kraemer's affiliation signifies more, it means his active participation in promoting the purposes of the respective organizations, and so a list of the titles of his publications and addresses made up six printed pages in the publication referred to. Many of the papers are subjects of editorials in the *American Journal of Pharmacy*, and reports of his research work in this journal. The pages of the A. Ph. A. Proceedings record others and a number are contributions to other pharmaceutical journals. But aside from these writings, many made their first appearance in *Science, Bulletin of the Torrey Botanical Club, Journal of the American Chemical Society, Botanical Gazette, Pharmaceutical Journal* (London), *Proceedings Academy of Natural Sciences, Proceedings American Philosophical Society, Torreya, Journal of the American Medical Association, Transactions of the Eighth International Congress of Applied Chemistry* and various State Pharmaceutical Association proceedings. The wonderful capacity for valuable work by the subject of this sketch is manifest. In this connection his assistance in the last two revisions of the U. S. Pharmacopoeia is considered and also the preparation of the first editions and later, revisions of his well-known books: "A Course in Botany and Pharmacognosy," "A Text Book of Botany and Pharmacognosy," "Applied and Economic Botany," "Scientific and Applied Pharmacognosy" and "Outline of Courses in Botany, Microscopy and Pharmacognosy." He also is one of the editors of the U. S. Dispensatory.

Professor Kraemer's investigations relate largely to botanical and pharmacognostical subjects but not by any means restricted to purely scientific research. Last year he delivered a lecture before the Section on Commercial Interests, A. Ph. A., in which he most interestingly presented the commercial value of pharmacognosy, showing that by its technic constituents of preparations in powder form may be identified and brought his subject into a relation with color schemes in drug store adornment and window dressing. So while his interest is in the science he has not lost sight of its practical application and commercial value. Much of his work has been concerned with pharmacography and pharmacognosy of powders with a purpose of devising means of identification and

standardization, and not only in this connection has he investigated colors but also relative to the origin and nature of the coloring matter in growing plants. Color photography has occupied much of his time and the numerous photographic plates he has developed speak for his industry and deep interest, and altruism also—for he contributes the results of his research to students and readers, many of whom have slight comprehension of the number of hours required for these investigations The starches as well as other plant constituents that now serve as diagnostic characteristics are considered in a number of his reports and papers.

While we regard Professor Kraemer as a scientist he does not lose sight of passing events and he is a close observer, evidenced, for example, by his recent address on "Kultur *vs.* Culture" before the last annual meeting of the American Drug Manufacturers Association, and also such papers as "A New Method of Education," "Life in a German University," "The Survival of Justice and Unselfishness," "Recreation," "The Retail Pharmacist as a Purveyor of Pure Drugs," etc. Without endeavoring to define Professor Kraemer's views of success and achievement the following is quoted from the closing remarks of his address referred to in the opening lines of this paragraph: "It is comparatively easy for a man to produce a master work, but it is difficult for him at the same time not to get out of touch with his fellows." From this we make the deduction that among his aims are the acquisition of useful knowledge, the communication of it to others and to remain in touch with his fellows. E. G. E.

LOYALTY TO THE COUNTRY AND TO PHARMACY.*

A GUIDE.

TO respect my country, my profession and myself.

To be a loyal citizen, to speak of my country with praise, and act always as a trustworthy custodian of its good name.

To be devoted to the cause of pharmacy, to lend my best efforts to its uplift and advancement.

To promote association work and thereby improve the service of pharmacy.

To be a pharmacist deserving of the respect and confidence of those whom I serve.

To look upon service in and for pharmacy as an opportunity to be seized with joy and made the most of, and not as a painful drudgery to be reluctantly endured.

To believe in pharmacy heart and soul, to be optimistic relative to its mission, and convey assurance of its importance to those who are served thereby.

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* The Guide from a paper by E. G. Eberle under above title, read before Pennsylvania Pharmaceutical Association, June 26, 1918.

EDITORIAL

E. G. EBERLE, Editor 253 Bourse Bldg., PHILADELPHIA

THE CHICAGO MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

THE indications thus far are favorable for a good and certainly an interesting meeting of the American Pharmaceutical Association, during the week of August 12.

Chairman Matthews, Local Secretary Gathercoal and the Committees under their direction have been doing excellent work, and all the pharmaceutical journals have been generous in giving publicity relative to the meeting. Considering that within distances of a few hundred miles from Chicago there are a score of large cities and many with a population of 5,000 or more, and also that the Association has not met in Chicago since 1893, it is reasonable to assume, even under present conditions, that the Convention will be well attended.

According to reports from several State Association meetings the registrations exceeded prior expectations, which is convincing that pharmacists recognize their duty in such attendance, especially this year, when many would gladly have come who could not because of the shortage of help. This condition will have its effect on the meeting in Chicago, therefore it is to be hoped that members will exert extraordinary efforts to be present.

There are more vital questions that require attention this year than ever before in the history of American pharmacy. The one previously indicated is not of least importance, because it concerns the boards of pharmacy and schools as well as retail pharmacists. How will the present shortage of help and the further depletion be met?

Other timely topics relate to alcohol regulations, means and methods of conservation, the war revenue measures, explosives law, contemplated health insurance laws, and bills for regulating the dispensing of remedies for venereal diseases. The Section on Education and Legislation can well afford to assign an entire session, or the greater part of one, for a discussion of these problems, and the derivable value will more than repay members for their attendance. In fact, their importance suggests the expediency of holding a meeting of representatives of State Associations in the House of Delegates for joint action on these matters, as all of their constituents are concerned relative to these provisions and projects.

Other phases of the same questions will find place on the programs of the other Sections, and the coördination and utilization of these discussions and papers contribute to greater efficiency among pharmacists and the advancement of

pharmacy. Those who specialize in any of the branches concerned with pharmacy are specialists; they render a very essential service; the retail pharmacists are generalists—they seek information from all of these sources for their needs in the practice of pharmacy.

There are other subjects equally or more important, as, for instance, the promotion of a pharmaceutical corps in the U. S. Army, as a part of its Medical Department, the adequate representation and coöperation of State Pharmaceutical Associations in the House of Delegates, and a consideration of the advantages to be derived by federating the associations of all the drug industries. Relative to the latter proposition your attention is directed to a paper in this issue by Chairman H. V. Arny of the committee having this important matter in charge. Presentations and outlines of the plans have heretofore appeared in the Journal, in the messages of President Dohme, and as part of Ex-President Wulling's address, last year. A careful study of the subject will enable members to participate in the discussions and to lend their counsel.

The call is to attend the Sixty-sixth Annual Convention of the American Pharmaceutical Association in Chicago, during the week of August 12.

Do your best! Come! E. G. E.

STANDARDS OF PHARMACY SHOULD BE UPHELD. PHARMACY STUDENTS OF DRAFT AGE SHOULD BE GIVEN OUR CONSIDERATION.

Pre-pharmacal education needs adjustment—"high school education or its equivalent," is indefinite. The "preliminary drug store experience" may signify a splendid preparatory training for the courses in pharmacy schools or, have little value. It is possible to standardize the first requirement but the latter presents a more difficult problem as the opportunities for training the prospective pharmacy students in drug stores differ as do the inclinations of those who are employed in them.

It is necessary for legal and other reasons to fix an age at which a person acquires certain rights not given to a minor, but this does not necessarily mean that a person of twenty-one years is better qualified for service in pharmacy than one a year younger. Experience and age have a relation to how the individual has employed his time and his ability and capacity for acquiring knowledge. The object is not to minimize the value of experience nor of age but to point out that these two requirements of the prerequisites for practicing pharmacy can be shaded in times like the present, provided, that the exigency for doing so exists and, more specifically, out of consideration for those who will enlist soon after graduation. There has been a depletion of pharmacists, and many others will answer the country's call; they should not be unnecessarily handicapped when they return

from service, so every reasonable opportunity, that does not do injury to the standing of pharmacy, should be given those under the draft age, before going abroad, for completing their education and securing their credentials as pharmacists. Such consideration enlists our immediate interest and may, perhaps, present a duty we owe them and pharmacy; the lowering of educational standards, however, for entrance or graduation requirements or for boards of pharmacy examinations would be deplorable.

A contemporary, in a recent issue, reported a statement from a Government official to the effect that there were only about eight reputable schools of pharmacy in the United States. Such a charge and every other aspersion of this kind should be answered. Charity would suggest that this statement was made without a knowledge of the facts. There is a tendency to remove the need of educational qualifications from pharmacy and it is therefore of greatest importance that the standards of pharmacy not only be maintained but advanced.

Notwithstanding that pharmacy has for many years been deemed necessary to medical practice, that pharmacists have provided the standards for medicines employed by physicians, have met every requirement, there is the inclination, tinctured with selfishness, to belittle its service, in fact, to ignore pharmacy and pharmacists. And to progress backward now would produce the arguments desired by the proponents.

Pharmaceutical education is in the process of standardization, it should not be impeded but the strongest encouragement should be given thereto, war or no war. The very fact that we desire the Government to grant pharmacists recognition by the establishment of a pharmaceutical corps makes such course even more necessary. While this is desirable and pharmacy is entitled to such recognition the point is that pharmacy deserves such support, progressive medicine requires the aid of progressive pharmacy and the people are entitled to the very best service pharmacy can render.

If it should finally be deemed necessary, for the special reason assigned, to grant concessions to students for admission to colleges of pharmacy, then let the entrance requirements be for a lesser number of years of experience, but this of a kind that has greater value in pharmacy; age of the student has a direct relation, but the number of years do not count for so much as how this time has been utilized. The courses in pharmacy should be progressively advanced and the preliminary educational requirements should be raised as fast as practicable. We can theorize as much as we like but the facts and the conditions must be faced.

Drug stores fill an important place in commercial life; in many of them pharmacy is insignificant and unprofitable and it would be far better for the proprietors to discontinue such service, if it can be done without inconveniencing the public.

Other stores can arrange their service so that a lesser number of pharmacists will be employed by assigning them to supervisional duties and to work that must be done by qualified pharmacists.

As far as educational requirements are concerned, let pharmacy go onward not backward. With this thought in mind let us give every possible consideration to the young pharmacists who enlist in the service of our country.

E. G. E.

THE FEDERATION OF PHARMACEUTICAL BODIES.*

BY H. V. ARNY.

It was the writer's fortune or misfortune to be honored with the chairmanship of the committee appointed by President A. R. L. Dohme, of the American Pharmaceutical Association, to consider the federation of American pharmaceutical organizations under the aegis of the oldest national pharmaceutical body in the country, the A. Ph. A. This Federation Committee began its work the early part of the current year and is still continuing its deliberations.

The idea of a federation of the several national bodies representing various branches of the drug trade was put forward by Henry P. Hynson, in 1916, in his masterly address as chairman of the house of delegates of the A. Ph. A. Dr. Hynson's idea was to make the house of delegates the rallying point at which all pharmaceutical bodies, including State pharmaceutical associations, could gather to their mutual advantage.

In his presidential address at Indianapolis last year, President F. J. Wulling discussed at length a plan of federation in which a Greater A. Ph. A. in conjunction with other national bodies would form a great organization of far-reaching influence, with journals, research laboratories and other means of disseminating pharmaceutical knowledge. He expressed the opinion that the raising of one million dollars for these beneficent purposes was a task by no means impossible.

Since assuming the presidency of the A. Ph. A., by reason of the untimely passing of our dear friend, Mr. Charles Holzhauer, Dr. A. R. L. Dohme, with his characteristic energy, has gone into the federation idea with all of the enthusiasm for which he is noted. He has submitted a plan of federation that is familiar to most of us here present, since it has been given prominence by the pharmaceutical press during the past few months. Briefly summarized, Doctor Dohme's plan proposes federation more quickly than can be expected if the project is to depend upon the prior raising of a large sum of money. He believes that the present national drug associations, with their already existing machinery of organization, with the wealth behind some of them, the numbers behind others, can be federated into a great body wielding tremendous influence, potential of great good to the public as well as to pharmacy. His plan employs for the federating, the present Council and House of Delegates of the A.Ph. A., with, of course, amended personnel and with enlarged powers. He also suggests several bureaus of service; a bureau of chemical aid and research, a bureau of legal information, a bureau of employ-

*Read at meeting of New Jersey Pharmaceutical Association, June 1918.

ment, a bureau for the exchange of certain goods and last, but most important, a legislative bureau designed to protect pharmacy from the continual assaults made against its interests by overzealous or half-baked legislation.

That Doctor Dohme's plan is highly attractive goes without saying; that it will be difficult to accomplish is obvious; but that it is impossible as some of its critics seem to think, is not the opinion of the writer, who has been forced by his work on the Federation Committee to give it careful attention.

It would be the height of bad taste for the writer or any member of the Federation Committee to express positive opinions as to details of any federation plan until the committee as a whole has arrived at some positive conclusions. The problem is too big to decide in a few weeks or even a few months. Our committee has already learned that it is well-nigh impossible to arrive at a decision by mail; hence plans are now being inaugurated to hold a committee conference in Chicago prior to the meeting of the A. Ph. A. in August.

On the other hand, a discussion of the general features of federation is both timely and important and this paper is being read for the main purpose of finding out the opinions of the members of this Association on the subject; to begin a discussion that may be of value to the Federation Committee in arriving at conclusions. In beginning this discussion the writer will quote what he has published elsewhere on the subject:

> The general idea of federation is worthy of our most serious consideration, for the plan is laden with tremendous possibilities for good, if wisely planned, and is fraught with distinct danger if carelessly and hastily contrived.
>
> No one can gainsay the immense influence that could be wielded by a united pharmaceutical America, retail, wholesale and manufacturing, when banded together in a common cause. Think of the legislative influence that could be wielded by the 100,000 Americans directly or indirectly interested in the drug trade, if welded into a flexible whole. Again, think of the possibilities of pharmaceutical betterment suggested by a huge federation with means enough at its disposal to conduct laboratories, legal bureaus and other aids available to every member of the federation. Most alluring is the picture thus presented.
>
> On the other hand, the creation of such a federation will be accompanied by many difficulties. How can such diversified interests as manufacturing, wholesale and retail pharmacy, get together upon a broad basis of mutual agreement? It can be done only by settling upon points of agreement and by leaving the points of disagreement to the separate trade organizations. The differences of view-point existing among the various lines of pharmaceutical endeavor are no farther apart than are the view-points of Oklahoma and New York, let us say. The experiment of federal government has stood the test of over a century, including a veritable test by fire, the Civil War. The success of this national federation of conflicting interests is largely due to the fact that basic principles of our Government are a federation for mutual defense; a confederation for mutual benefit. As long as our Government stands for these two principles, as long as it abstains from attempts to force the local opinions of New York upon Oklahoma, and *vice versa*, its success is assured.
>
> In the proposed pharmaceutical federation, the same spirit should prevail. We have ever with us a need of defense in the thousand different kinds of legislation that zealots outside of the calling try to force upon the trade. The first principle of the federation should therefore be uniformity in legislative matters and a strong committee consisting of members of the legislative committees of the several national associations should be the first duty of the federation. The Drug Trade Conference has shown what can be done in this line when action is based on mutual interests rather than class advantages, and if the pharmaceutical federation becomes an accomplished fact, it will take over the present functions of the Drug Trade Conference.
>
> One of the greatest bonds that binds the several States of our Union together is the service rendered by the Federal Post-Office Department and similar bureaus whose heads form the

National Cabinet. Even so, if the pharmaceutical federation is to succeed, it must have service features that can be used by all diversified branches of American Pharmacy. As mentioned above, it is in this direction that the Dohme plan is peculiarly attractive.

That is as far as the writer cares to go in expressing, for the present, his views of the proposed federation. He desires to hear the views of others, notably of those who have had active connection with other national pharmaceutical bodies, which must be included in the federation if it is to be a real success. He stands ready to explain, to the best of his ability, details of the several plans of federation that have been thus far proposed. And above all, he urges this Association to see that it is represented by its strongest members at the meeting of the House of Delegates of the A. Ph. A. in Chicago when the federation idea is to be discussed from all angles.

THE ACID TEST.*

BY J. W. STURMER.

In these trying days the motives of men, their aims, their capabilities—and their weaknesses as well—are more apparent than was the case when times and conditions were normal. For the conditions under which we now live, and work, subject us all to the severest tests. American pharmacists have never been tested as they are being tested at this time of stress. If they stand the test, the future of pharmacy will be assured. And so far they have shown up splendidly.

But there are false prophets and bad advisers. These like the poor, are with us always. Certain influences are at work to repeal or emasculate our pharmacy laws. And the argument, forsooth, is that we must adjust ourselves to war conditions. So we must, indeed. But were pharmacy laws passed for the pecuniary benefit of pharmacists, or were they passed for the protection of the public? Are the barriers to be raised or lowered in accordance with the supply of clerks—without reference to other considerations? If so, these laws are to be considered as class legislation, and would be un-American and in fact unconstitutional. If these laws were enacted for the public good—and we at least know full well that such was indeed the case—then the question is pertinent, do war conditions confer upon any man, or any group of men, license to ignore the dictates of public policy? Is human life less sacred because we are engaged in war? Now that our boys are fighting on foreign soil, are we, who have been intrusted to hold the last line of defense, to be less alert in the protection of the families of these boys in the first line trenches, just because we are becoming inured to a long casualty list? The answer may be educed from the fact that our governments—national, state and municipal—are putting forth greater efforts than ever before in controlling epidemics, in reclaiming the physically unfit, in reducing infant mortality, in safeguarding the laborer at his work, in conserving our food and our fuel. Life must be risked in battle. For that very reason, it must be conserved at home. Under these circumstances, the duties and the obligations of pharmacists are clear, and the agitators who at this time, endeavor to weaken our pharmacy laws, will find no supporters within the ranks of the real pharmacists. It is to the lasting credit of pharmacists and pharmaceutical associations that they lead the fight for

* Read before Pennsylvania Pharmaceutical Association, 1918 meeting.

pharmacy laws, and welcome the regulations indicated by public policy. These self-same pharmacists and pharmaceutical associations will deem it their patriotic duty to maintain these regulations at any cost, and against all assailants.

To be sure, some kind of readjustment is imperative. Pharmacists are but human. They can work only so many hours. They, like other workers, need rest, out-of-door recreation, and some diversions. They should have them. They will work the better because of them. But is it not possible, in the larger stores and even in the medium-sized stores, to "departmentalize" and to conserve the professionally trained for the sale and compounding of medicines, using mere salesmen and saleswomen in the package goods departments and for the side lines? Indeed, I would say that such a plan has been in operation in many city stores and has not only proven its feasibility, but has been most profitable. Then, women should be encouraged to take up pharmacy, for which their fitness has been conclusively demonstrated. This, of course, is not so much for the relief of the present emergency as to provide for the future, as these women must be trained in a systematic and thorough manner.

And as for the pharmacist in the one-man store, he also needs his hours of recuperation. To obtain them, he can close at specified hours. But it would seem that public interest should be considered in this, and that, in place of closing all the stores of any given locality at the same time, there should be a system of rotation, so that some trained pharmacist may at all times be available.

In conclusion, permit me to point out that the condition created by the enlistment of thousands of physicians, has augmented the purely medical duties of those physicians who have remained behind to serve the civilian population—and this to such an extent, that many who in the past dispensed their own medicines, now find it practically impossible to continue such practice. This is, therefore, the great opportunity for pharmacy. It has been said, and justly so, that the medical man in the army should be relieved of all non-professional duties, and it has been proposed that the pharmacist should assume those duties. To bring this about, certain officers in high command must be converted, or legislative enactment must be had.

But in civil life, no such obstacles are in the way, and prescription writing may reasonably be expected to increase, as a result of the dearth of civilian physicians, and the added duties devolving upon each, along the lines of purely medical service. And if pharmacists in civil life succeed in reclaiming the position they once held, the pharmacists in the army will find their chances for recognition improved correspondingly. Is this, then, the time to lower the bars, and to let in incompetents? The war has developed a keener realization of the duties of citizenship. Every good citizen must render service. So must every profession. And to pharmacy comes, with the opportunity for service, the greatest opportunity for professional advancement which has presented itself within the memory of men now active. Under these war conditions, pharmacy cannot remain stationary; it must either rise or decline. The crisis is here. Hence I say that pharmacy is now being subjected to the acid test. We shall soon know its "metal." And I for one feel assured that it will prove to be royal metal—that pharmacy will meet the test.

SO-CALLED SYRIAN ALKANET, MACROTOMIA CEPHALOTES, D. C.*

BY CLARE OLIN EWING AND JOSEPH F. CLEVENGER.

A sample of "Alkanet," recently submitted for our examination, proved to be, not the root of true Alkanet (*Alkanna tinctoria* Tausch), but that of so-called Syrian Alkanet (*Macrotomia cephalotes*, D. C.). Both the plants named belong to the *Boraginaceae*, and are indigenous to Asia Minor and southeastern Europe.

Previous investigators have observed alkannin-like tinctorial principles in other members of the Borage family. Vogtherr[1] has noted several foreign pigment-bearing species of *Boraginaceae*, and has discussed *Macrotomia cephalotes* in some detail. His description of "Syrian Alkanet" is accurate, although his accompanying sketch shows a root somewhat larger than any which we have observed. From *Macrotomia* he extracted 9.13 percent of a crude coloring matter which "seemed to be identical with that of Alkanet." His paper does not indicate the solvents or methods used in extraction. Coloring matters have also been noted by Norton[2] in a number of American *Boraginaceae*. While this investigator made no analysis of the tinctorial principles of his material, by testing with resins and oils he obtained an alkannin-like reaction from the leaves and roots of *Plagiobothrys*, and suggested the possible utilization of some of these plants.

The submitted sample (Fig. 1) was easily distinguishable from true alkanet root. It was very much larger in size; it occurs in pieces from 20 to 40 cm. long and 2 to 5 cm. thick, whereas alkanet is about 1 to 1.5 cm. in diameter and is usually 10 to 15 cm. long, although it sometimes occurs in pieces up to 25 cm. in length. The sample also was many headed, in contradistinction to the one or few heads of alkanet. It was black-violet in color and somewhat metallic in appearance, whereas alkanet is of a dull maroon color. Alkanet is only slightly twisted, while the "Syrian Alkanet" had a distinctly spiral twist, resembling a twist of tobacco. Vogtherr's figures shows a specimen with a much shorter spiral than any which we have observed. A section of alkanet shows that the wood is centrally placed and is surrounded by a tissue of loose, almost spongy texture. In the sample of "Syrian Alkanet" the wood, which was straw-yellow in color, was laterally placed and was accompanied by a layered coffee-brown-gray tissue on the inside, and a blackish violet color on the outside.

FIG. 1.
Root of *Macrotomia cephalotes*.
a.—Top showing heads.
b.—Portion of main body.

* Contribution from Pharmacognosy Laboratory, Bureau of Chemistry, Department of Agriculture, Washington, D. C.

[1] Vogtherr, "Über Alkanna und ihre Verwandten," *Pharm. Centralh.*, 37, 148–52 (1896).

[2] Norton, "The Coloring Matter Found in Some Boraginaceae," *Amer. Journ. Pharm.*, 70, 346–8 (1898).

Samples of both products were ground to a No. 20 powder and the coloring matter completely extracted from 10-gramme samples with chloroform in a Soxhlet extractor, the extract evaporated on the steam bath and dried at 100° C. It amounted, in the case of true alkanet to slightly over 5 percent; in the "Syrian Alkanet" it amounted to about 9 percent. The colored extract, crude alkannin from alkanet is generally reported as varying from about 4 to 6 percent, depending somewhat on the solvent used. As mentioned above, Vogtherr reports 9.13 percent of extract for a sample of "Syrian Alkanet," but does not indicate the nature of the solvent.

Both extracts were dark brownish red, metallic glistening masses, the Syrian Alkanet being a trifle darker. They softened under 100° C. (steam bath) without having a definite melting point. This was due, no doubt, to the wax which, according to Liebermann and Römer[3] is, after alkannin, the principal constituent of the extract. They isolated this wax from commercial crude alkannin and found it to be hydrocarbon melting at 75° C.

The alcoholic solution of both extracts varied from cerise to a dark red, depending upon the concentration. The colors apparently were very nearly identical, that from Syrian alkanet being perhaps of a more purplish shade. Colorimetric comparison of solutions of the two extracts of similar concentration showed that the proportions of coloring matter in both were approximately the same.

Gawalowski[4] has stated that the coloring matter of alkanet is not a single chemical individual, but contains two coloring constituents. The first, which is extracted with petroleum ether, he called anchusic acid (anchusa red), and ascribed to it the probable formula $C_{30}H_{39}O_7$; the second, which he extracted with ether and alcohol, he called alcannic acid (alkanna red) and ascribed to it the probable formula $C_{15}H_{14}O_4$ (or $C_{30}H_{28}O_8$). In view of this statement, fractional extraction was made of both products, with the following results:

	Alkanet.	"Syrian Alkanet."
Petroleum ether extract	3.36 percent	4.69 percent
Ether	1.22 percent	3.64 percent
Chloroform	0.61 percent	0.66 percent
	trace	trace
	5.19 percent	8.99 percent

Both of the petroleum ether extracts were bright red in color, dark red in thicker layers. The ethereal extracts were of a purplish black color and were insoluble in petroleum ether. Both had an odor of acetic and butyric acids, similar to that which we have noted in a commercial specimen of crude alkannin. The chloroform extracts were also of a purplish black color and were insoluble in ether and petroleum ether. The alcoholic solutions of the petroleum ether extracts were of an intense bright red color. The alcoholic solutions of the ether and chloroform extracts were of a less intense purplish red color than those of

[3] "Uber Alkannin," *Ber.*, 20, 2431 (1887).

[4] Gawalowski, A., "Die Pigmente der 'Radix Anchusa tinctoria' in ihrer Bedeutung für die alkalimetrische und acidimetrische Analyse," *Zeit. anal. Chem.*, 42, 108–9 (1913).

petroleum ether, the difference in intensity and shade being more pronounced in the higher dilutions. The large amount of the ether and chloroform extracts in the Syrian Alkanet explains the purplish tint of the preliminary chloroform extract noted above. The color tests, which are tabulated below, show that the material extracted by petroleum ether differed chemically from those extracted by ether and by chloroform. Although the two latter were obtained separately, their reactions with the various reagents used were similar and they are therefore not listed separately.

COLOR REACTIONS OF ALKANET AND SYRIAN ALKANET.

	Alkanet.		"Syrian Alkanet."	
	Petroleum ether.	Ether and chloroform extract.	Petroleum ether extract.	Ether and chloroform extracts.
Basic lead acetate..	Deep purple color and precipitate	Bluish gray color and turbidity	Deep purple color and precipitate	Bluish gray color and turbidity
Uranium acetate..	Bluish gray color	Dirty green color	Bluish gray color	Dirty green color
Ammonium hydroxide.....	Indigo-blue color; purplish shade	Violet color	Indigo-blue color; less purplish	Violet color
Potassium hydroxide.....	Indigo-blue color	Light blue color; faint suggestion of green	Indigo-blue color	Light greenish blue color
Stannous chloride.	Cherry-red color; yellow after addition of HCl	Paler color than P. E. extract	Cherry-red color; yellow after addition of HCl	Paler color than P. E. extract
Ferric chloride.....	Dark violet color and turbidity	Dirty greenish brown color	Dark violet color and turbidity	Dirty greenish brown color
Mercuric chloride..	Bright cherry-red color; purplish red precipitate	Pink color	Bright cherry-red color; purplish red precipitate	Pink color

In addition to the above reactions, the color of all three extracts of both the alkanet and the "Syrian Alkanet" was destroyed when a few drops of a saturated solution of bromine water were added to a dilute alcoholic solution; the color was restored by the subsequent addition of several drops of 3 percent hydrazine sulphate solution. This reaction is considered by Mathewson[5] to be quite specific for alkanet.

An extract of "Syrian Alkanet," prepared with 95 percent alcohol, diluted with water to 50 percent concentration of alcohol, gave very satisfactory results in this laboratory and in the Microbiological Laboratory of this Bureau in the staining for microscopic observation of sections containing fats (soy beans, castor beans, yellow mustard seed, etc.) and resins (podyphyllum rhizome and white bryony root).

The specimen of "Syrian Alkanet" was clean and free from dirt and other foreign materials. The genuine alkanet, while apparently quite clean, upon close inspection showed the presence of minute particles of sand, which adhered very tenaciously to it. We have observed this condition in a number of other commercial specimens of alkanet. Ash and ash-insoluble determinations on two-gramme portions of the No. 20 powder gave the following results:

[5] Mathewson, W. E., "Separation and Identification of Food-Coloring Substances," Department of Agriculture, *Bull.* 54, 448 (1917).

	Alkanet.	"Syrian Alkanet."
Total ash	17.0 percent	11.7 percent
Acid-insoluble ash	8.0 percent	0.8 percent
The ash in both cases was high in carbonates		

From the above data it may be seen that the coloring extracts from both plants consist of at least two chemical individuals and that both extracts are very similar in nature. In view of the fact that in Syrian Alkanet the coloring extract was present in much larger amount than in the true alkanet, and possessed equivalent tinctorial strength, it would appear to be a valuable substitute for the latter.

THE ESTIMATION OF ALCOHOL.*

BY C. R. HARER.

While the estimation of alcohol in pharmaceutical preparations is not very complicated, it, nevertheless, presents many difficulties and affords opportunities for experiment and research.

Frothing, in numerous cases, is readily controlled by tannic acid; while in particular instances sulphuric or phosphoric acid, as advised by some writers may be preferable, I find tannic acid more generally practical, although the variation of its action with different drugs has not been determined. After the addition of tannic acid to fluidextracts of gelsemium, helonias and several other drugs, they must be heated very rapidly to boiling to control the frothing. The addition of tannic acid to fluidextracts of black haw, mango bark and several others increases the frothing instead of retarding it. The addition of tannic acid to preparations of cinchona produces an uncontrollable frothing when heated, while if heated slowly without tannic acid, the liquid will froth at first, but the foam will soon subside and regular boiling take place; the initial frothing may be almost instantly eliminated if the liquid is heated rapidly in such a way that the flame is thrown on the upper part of the distilling flask for a few seconds, when the liquid starts to boil.

The estimation of alcohol in fluidextract of sarsaparilla presents greater difficulties than many other preparations, and the following experiments were undertaken for the purpose of finding a convenient and rapid method for its determination: Mechanical methods (paraffin, fixed oils, etc.) to control the frothing were tried, but without success. Baryta water was then used to precipitate the saponins and resins, but this gave no satisfactory results. Several experiments were made by adding a suspension of aluminum hydroxide to the fluidextracts also by adding an aluminum salt to the fluidextract and subsequently precipitating the hydroxide with a caustic alkali. These experiments were failures. Next an addition of the official solution of lead subacetate was tried, but I found that a direct distillation of fluidextract of sarsaparilla with lead subacetate solution was impracticable because frothing was unavoidable and it was impossible to separate the aqueous alcoholic liquid quantitatively from the voluminous gelatinous precipitate by fil-

* Read before Scientific Section, A. Ph. A., Indianapolis meeting, 1917.

tration; however, the following method yielded satisfactory results: Fifty mils of the fluidextract was transferred to a 100-mil cylinder, 15 mils of solution of lead subacetate was added, and sufficient water to make 100 mils. The mixture was thoroughly shaken and 50 mils, equivalent to 25 mils of fluidextract, was filtered off. This was transferred to a distilling flask, sodium bicarbonate was added to an alkaline reaction, followed by a slight excess of tannic acid. Generally traces of acetic acid are present in the distillate, but in such small quantities as not to influence the results.

In order to ascertain whether or not the method gave accurate results, the following experiments were made: 200 mils of the fluidextract of sarsaparilla was evaporated to a syrupy consistency; this residue to which 50 mils of water was added twice, which each time was evaporated, was taken up in water and transferred to a 200-mil flask; 90 mils of 94% alcohol was added and enough water to make 200 mils. Two distillations were made with this dilution and 41.5 percent and 41.2 percent of alcohol was found. At the same time a volume of water approximately equal to that of aqueous solution of the residue was placed into a 200-mil flask, 90 mils of 94% alcohol was added and sufficient water to make 200 mils. The sp. gr. of this aqueous-alcoholic mixture showed that the liquid contained 42.3 percent of alcohol. When 25 mils of this aqueous-alcoholic solution, to which 50 mils of water and 3 mils of solution of lead subacetate had been added, followed by sodium bicarbonate to an alkaline reaction and then tannic acid to an acid reaction, was distilled, 41.3 percent and 41.4 percent of alcohol was found. In the latter distillation approximately the same conditions are given as in the distillation of the liquid which is obtained by treating the fluidextract of sarsaparilla with lead subacetate solution and filtering.

The estimation of alcohol in preparations containing volatile substances presents another interesting part of this kind of work. Volatile alkali can easily be eliminated by adding tannic acid or other suitable acids, preferably phosphoric acid, while volatile acids can be taken care of by adding a fixed alkali; substances, however, like camphor, volatile oils and chloroform can be removed only by special processes.

The U. S. P. directs that the sample containing volatile substances be distilled in the usual way, the distillate transferred to a separator and saturated with sodium chloride; 15 mils of petroleum ether are then added, the mixture is thoroughly shaken and allowed to separate. The salt solution containing the alcohol is then drawn into another separator and washed once with petroleum ether. The combined ethereal solutions are washed once with 10 mils of a saturated solution of sodium chloride, which is added to the aqueous solution. The combined aqueous liquids are then distilled and the alcohol estimated in the usual way.

For liquids containing chloroform, the U. S. P. method gives satisfactory results, as the following experiments show:

Sample No. 1.—Seven mils of chloroform was transferred to a 200-mil flask and sufficient diluted alcohol (about 45 percent) was added to make a total volume of 200 mils. Three determinations of alcohol of this sample by the U. S. P. process gave 44, 43.65 and 44 percent.

Sample No. 2.—Seven mils of water was transferred to another 200-mil flask and enough of the above hydro-alcoholic solution was added to obtain 200 mils. The sp. gr. of this sample indicated 45.55 percent of alcohol, while the determination of the alcohol by distillation gave 44.5 and 44.83 percent of alcohol.

While there is quite a difference of opinion as to the best method of estimating alcohol in liquids containing volatile oils, the U. S. P. method as previously stated and the N. F. IV process, which directs distilling the liquids, shaking the distillate with magnesium carbonate and filtering, are generally used. Very good results can be obtained in preparations containing a mixture of volatile oil and alcohol, or oils, alcohol and water without other extractive matter, such as spirit peppermint, spirit myrica, by eliminating the oil first, then distilling and taking the gravity of the distillate as the following experiments show; for these experiments a concentrated fluid of bay laurel was made containing about 20 percent of the combined oils pimento, myrica, and orange and 66.15 percent of absolute alcohol.

Experiment No. 1.—Twenty-five mils of the fluid was transferred to a separator containing 20 mils of saturated solution of sodium chloride and 20 mils of petroleum ether was added. The separator, containing the mixture, was thoroughly shaken and the liquids allowed to separate. The alcoholic liquid together with the salt which had separated from the solution when the fluid was added, was drawn into another separator and washed with a second portion of petroleum ether. It was then transferred to a distilling flask. The combined petroleum ether was washed with 10 mils of a saturated salt solution which was also transferred to a distilling flask and the combined aqueous-alcoholic liquids were distilled. The sp. gr. of the distillate indicated the presence of 56.9 percent alcohol, while a check experiment indicated 57.2 percent.

Experiment No. 2.—This experiment differs from the preceding only in that when the fluid was added to the 20 mils of salt solution, enough water was added to redissolve the salt which had separated. By this method 62.1 and 62 percent of alcohol was obtained. This seems to indicate that in the presence of excess of salt, some alcohol is carried mechanically into the petroleum ether with the oils.

Experiment No. 3.—Twenty-five mils of the fluid was transferred to a separator and saturated with sodium chloride and after the addition of 20 mils of petroleum ether the mixture was shaken. When the liquids had separated, the aqueous-alcoholic layer was drawn into another separator and washed with another portion of petroleum ether; the combined ethereal liquids were washed with 10 mils of saturated salt solution, which was added to first solution. The combined aqueous-alcoholic liquids were then distilled and the distillate was found to contain 64.6 percent of alcohol, while a check experiment indicated 64.7 percent.

Experiment No. 4.—Twenty-five mils of the fluid was transferred to a separator, 20 mils of saturated salt solution was added and enough water to dissolve the salt which had separated. After the addition of 20 mils of petroleum ether, the estimation was carried out in the usual way, with the exception that after the petroleum ether had been washed with 10 mils saturated salt solution, it was washed with two portions of 10 mils each of water. By this process 65 and 65.2 percent of alcohol was obtained.

Experiment No. 5.—This experiment was made by following the exact directions of the U. S. P., 65 and 65.3 percent of alcohol was found.

Experiment No. 6.—Twenty-five mils of the fluid was transferred to a distilling flask and after the addition of 50 mils of water, the mixture was distilled. The distillate was shaken with talcum and filtered. It contained 64.9 percent of alcohol and a check experiment gave 64.7 percent of alcohol.

Experiment No. 7.—As a last process Richter's modification (*Pharm. Zeit.*, 1914, page 431) of a process originated by Thorpe and Holmes (*Jour. Chem. Soc.*, XIX, page 259) was applied. This method is very simple and gives accurate results and is carried out as follows:

Thirty mils of the fluid is mixed with 30 mils of a 15% sodium chloride solution and 30 to 40 mils of petroleum ether boiling below 60° C. is added. The mixture is shaken well in a separator and then allowed to settle; when the lower layer has become clear, it is drawn off and, if necessary, filtered with a small amount of magnesium carbonate, 50 mils of the filtrate representing 25 mils of original sample is distilled. 65.8 and 66.1 percent of alcohol was obtained by this method, which percentage agrees closely with the theoretical amount.

The results appear tabulated as follows:

Process.....	1. Percent.	2. Percent.	3. Percent.	4. Percent.	5 U. S. P. Percent.	6. Percent.	7. Percent.
1st.....	56.9	62.1	64.6	65.2	65.3	64.9	65.8
2nd.....	57.2	62.0	64.7	65.0	65.0	64.7	66.1

The tabulation indicates that process VII yields the best results, while the U. S. P. and process IV yield very nearly the theoretical amount of the process alcohol present.

LABORATORIES OF SHARPE & DOHME.

THE REACTIONS OF GOLDFISH TO CERTAIN HABIT-FORMING DRUGS—THE USE OF THE GRADIENT TANK.

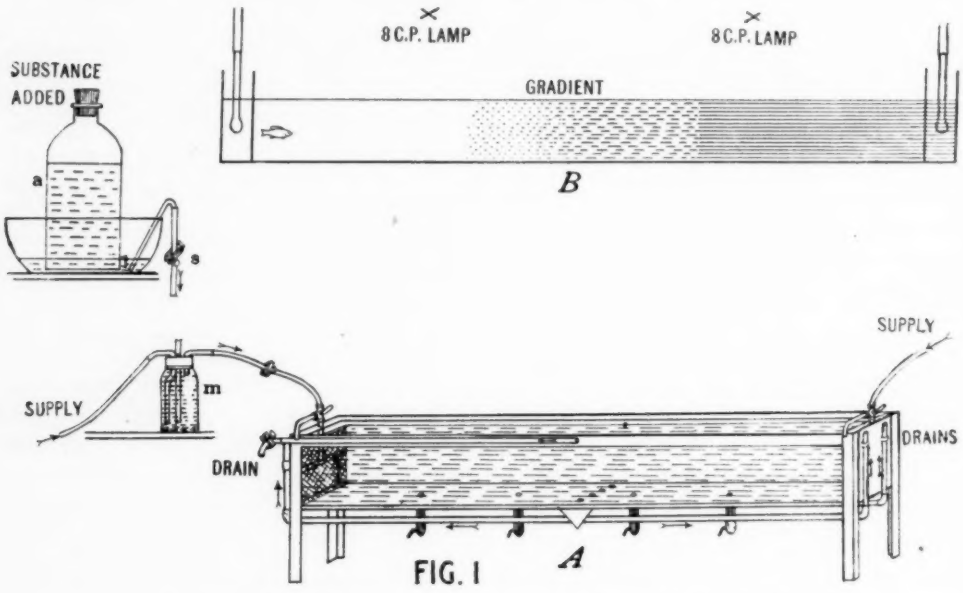
BY VICTOR E. SHELFORD.

The problem of the cause of the development of the drug habit, *i. e.*, of the peculiar effects of habit-forming drugs which cause the user to crave them, has been approached from several different angles, but none of them have afforded a solution. Attention appears to have been directed especially toward morphine and related compounds.[1] The theory that morphine causes the formation of oxymorphine, which produces an effect the opposite of morphine, has been exploded by the discovery that oxymorphine is not formed and that its effects are not the opposite of morphine. The idea that immunity is developed is rejected because of the fact that such immunity does not exist in animals which are habituated by the use of morphine. The increased capacity of the organism to destroy morphine is not an adequate explanation as morphine is very slowly destroyed.

Most of the work has been done on mammals, some on frogs, but I find almost nothing in the literature that shows the development of anything like a craving, taste, or preference for the substance in question, on the part of the lower vertebrates. In fact it is not easy to show that these animals are so affected. By chance the writer discovered that fishes are peculiarly affected by numerous organic substances in aqueous solution, when put under special experimental conditions. These conditions are established in a long, narrow tank, 122 cm. long, 15 cm. wide and 13 cm. deep (see Fig. 1-A), in which water containing a drug flows into one end and out at both top and bottom, at the middle, while water which contains none of the drug flows into the other end at the same rate. The two flows meet at the middle and with most substances there is a mixture of the two kinds of water which occupies the center third of the tank. In this mixture a fish moving from the pure water end toward the drug-containing end encounters a gradual rise in concentration of the drug. This region of change of concentration is called the gradient. The character of the gradient in these tanks has been fully determined, by taking samples, by measuring conductivity, and by the use of colored water. Usually a sample which contains none of the salt or any amount from the faintest traces up to the full concentration introduced, may be withdrawn (Fig. 1-B). Some substances diffuse almost through-

[1] Sollman Manual of Pharmacology, 1917.

out the tank, so that the gradient, or region in which there is a rise in concentration extending from near the pure water end toward the end in which the drug is introduced, reaches almost the entire length of the tank.



GRADIENT TANK (A). LONGITUDINAL SECTION OF TANK (B).

Figure 1-A:—The gradient tank and apparatus for introducing drugs into one end. The water flows into the two ends of the tank from a common source. The flow is adjusted with a pinch cock on a rubber hose at the right-hand end, for example, at 500 Cc. per minute. This is done by turning the 3-way valve so as to run the water outside of the tank through the small spout which ends at the water level just outside of the tank. The water can be caught here in a graduate for a definite length of time and the flow per minute determined. The flow at the end into which the drug is added may be set at, say, 400 Cc. per minute and then sufficient of the drug solution added to the mixing bottle from the siphon above at the left (100 Cc.) to make this 500 Cc. also. The solution of a non-volatile drug is siphoned (see Fig. 1-A) from dish in which is a 12-liter aspirator bottle (*a*) with the upper opening tightly corked and the lower one open. When the water in the dish falls below the level of the lower opening a few bubbles of air slip in and the same amount of fluid flows out, thus maintaining a constant level in the dish as long as the supply in the aspirator bottle holds out. Volatile substances have usually been added directly from the lower opening of the aspirator bottle. In this case it is necessary to correct the flows occasionally. The drug solution is run into a mixing bottle (*m*) which is connected in the flow of pure water.

Figure 1-B shows a longitudinal section of the tank when a substance is introduced at the left-hand end. The substance is shown by black markings. The central portion shows a gradient between pure water (white) and black lines. The graphs are drawn on the basis of the position of the fish in this longitudinal section.

In order to discuss the behavior of fishes in habit-forming substances, it is first necessary to note in detail what happens when (1) a fish encounters no change in water and (2) when it encounters water containing a quantity of carbon dioxide or other environmental substance. When the water is the same throughout fishes usually go back and forth in the tank either without turning around in

the middle or, if so, without showing any preference for either end. Graph 1 shows the usual movement of an active goldfish which went back and forth, and though it turned around in the middle third of the tank occasionally, it turned the same number of times when headed each way, even in the short 20-minute period. Graph 9 shows a control graph in which an inactive fish staid near the center. Graph 10 shows the behavior of a minnow which swam from end to end, except for stopping under the lights—a reaction quickly masked by response to another stimulus. When introduced into a tank in which the water running into one end is charged with carbon dioxide up to about 15 Cc. per liter, or more, the fishes act in a very striking and characteristic way (2). When they swim into the acid water, the fishes undoubtedly sense deleterious concentrations of CO_2 upon entering it. They give evidence for this by the following activities, as shown by an earlier set of experiments:[2] A definiter eflex was often given by minnows (*Abramis, Notropis, Hypopsis*) and sunfishes (*Lepomis*), the first time they entered the modified water. The fish suddenly stops, backs quickly a few millimeters, and then starts ahead again, often repeating the reflex before going farther forward. In an earlier paper, this was called the backing-starting reaction. This may be due to stimulation of the nostrils, as Sheldon[3] states that stimulation of the nostrils of the dogfish results in a quick jerk of the head. There is acceleration or increased vigor of movement of fins, tail, or body, which begins at once or after a very short time. Sheldon found that the application of solutions to these parts caused them to be moved. The opercles were lifted, the lower jaw protruded, or the mouth moved in a manner characterized as coughing, gulping or yawning. Sheldon found that stimulation of the mouth or spiracle gives rise to violent gulps. In our experiments these reactions occurred singly or in combination. The time necessary to produce them was variable, but depended upon the strength of the stimulus, which confirms further observations by Sheldon.

When a fish enters a deleterious solution of alcohol, cocaine, morphine, or any one of the several other substances, nothing of the kind ordinarily happens. There is no rejection of the drug containing water, no gulping or raising of the opercles. The fish swims into the water apparently without noting any change. After a few entrances it begins to turn back from the normal, pure water, or from the lower concentrations of the drug in solution just as from carbon dioxide, but usually without the gulpings, or any of the other movements which follow stimulation. This was first noted in the study of the reaction of the golden shiner to ammonia in 1911.[4] It was again observed in the study of the reactions of a number of species of fish to coal-tar products in connection with a study of the effects of stream pollutions.[5] Fishes of various species showed a *preference for*, that is, *reacted positively to*, coal-tar products, various mixtures of them, and gas liquor. The species giving positive reactions were the large-mouthed black bass, minnows (*Notropis, Pimephales, Abramis*), rockbass, and three species of sunfish.

The substances for which the fishes showed the preference as described, and to which they are said to react positively, are the following: Ammonia and

[2] Shelford & Allee, *Jour. Expt. Zoöl.*, 14, 208–256; *Jour. Animal Beh.*, 4, 1–30.

[3] Sheldon, *Jour. Comp. Neurol.*, 19, 273–331.

[4] Shelford and Allee.

[5] Shelford, *Bull. Ill. St. Lab. of N. H.*, 11, 383–411.

several of its salts, aniline, pyridine, isoquinoline, sulphur dioxide, carbon disulphide, thiophene, acetone, phenol, paracresol, phenanthrene, naphthalene, xylene, toluene, acetylene, illuminating gas, and waste.

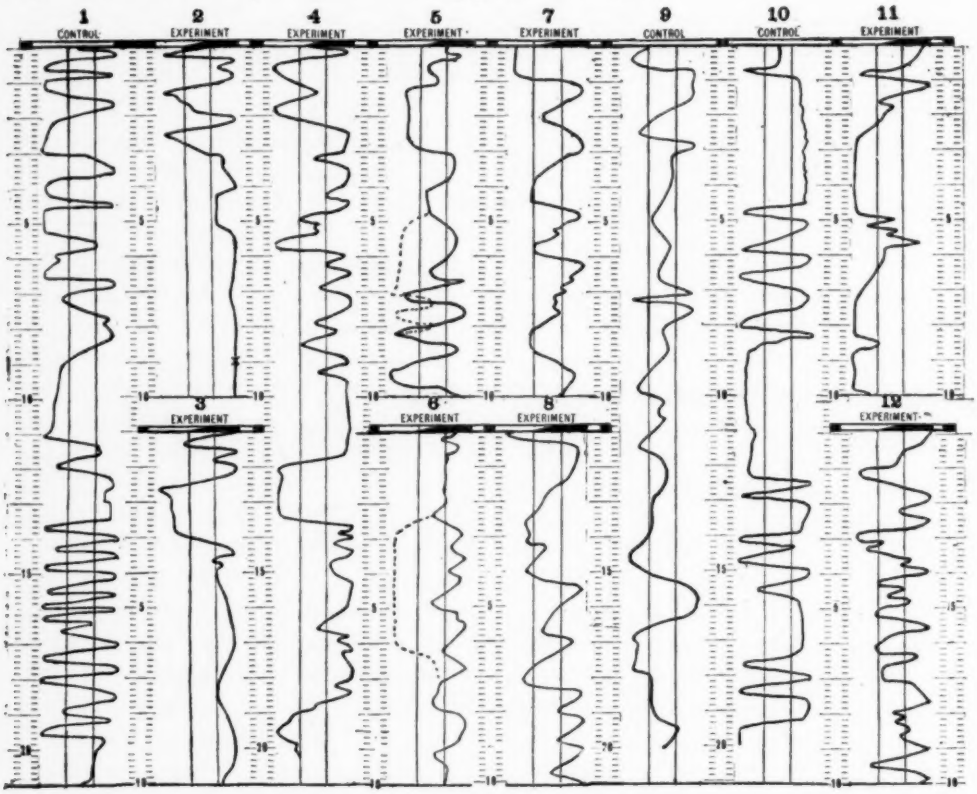


CHART 1.

The graphs on this chart, numbered 1, 9, and 10, show the movements of fishes in the gradient tank when no drug has been added at the end, and the water is therefore of equal purity throughout.

The gradient tank is shown in Figure 1-A. Figure 1-B is a diagram of a longitudinal section of the tank; the left-hand end was used for the introduction of water such as the fishes had been kept in, and the right-hand end was used for the introduction of water to which the substance being tested had been added. The light vertical lines are intended to indicate the location of thirds of the tank length. The solid black area at the right between the two lines at the head of each graph is intended to show the part of the tank in which the drug solution is nearly the full strength of that flowing in, and the narrowing of this black area from right to left in the middle third is intended to indicate the region of principal gradient; X indicates that the fish became intoxicated.

Graph 1 shows the usual back and forth movement of a goldfish when not encountering any difference in the water in the two ends—a control experiment.

Graph 2, positive reaction of a goldfish to water containing 0.35 Gm. cocaine hydrochloride per liter introduced at the right. The fish turned back on encountering a slight dilution after 40 seconds, swam the entire length of the tank twice, turned back on encountering a slight dilution at the end of four and a half minutes and remained in the highest concentration of the drug until intoxication resulted.

Graph 3, the same as the preceding, but a different fish; shows a strong preference for the cocaine solution and an avoidance of the pure water.

Graph 4 shows a positive reaction of a goldfish to a 1.5 percent solution of ethyl alcohol introduced at the right-hand end. The fish turned back repeatedly from the pure water after trying out the tank during the first three minutes. A graph of the reaction to 10 percent alcohol resembled No. 3 very closely.

Graph 5, an indifferent reaction of two goldfish to 0.15 Gm. per 1 Gm. of morphine hydrochloride. Where the two fishes moved together only one line appears; where separately, one of them is indicated by a broken line.

Graph 6, a positive reaction of two goldfish to 1 Gm. per 1 Gm. of morphine hydrochloride per liter. One fish was negative to the water without morphine from the beginning; the other spent three minutes in the pure water beginning at the end of three minutes.

Graph 7 shows a positive reaction of a goldfish to water half saturated with naphthalene; Graph 8, to saturated naphthalene. In both cases the fish became positive to the naphthalene at once.

Graph 9 shows a control movement of a sluggish goldfish.

Graph 10, a control movement of a wild minnow (Pimephales).

Graph 11, a negative reaction of such a minnow to 1–2 percent alcohol.

Graph 12, a positive reaction after the fish had been kept for 30 minutes in a 0.5 percent solution of alcohol.

Fishes are not invariably positive to all of these, as the positive reaction is often determined by concentration, character of the dissolving water, etc., but positive reaction is the usual rule. While ether, chloroform, chloral, and paraldehyde are habit-forming in the case of man, I find no records in the general works for any of the coal-tar products noted above. Since the goldfish has been used as a test animal in drug standardization, it was thought desirable to test its reactions to two or three habit-forming drugs. Cocaine hydrochloride, morphine hydrochloride, and ethyl alcohol were chosen. The standard gradient tank with symmetrical incandescent lights and a hood were used with general results as described on p. 598. Because of the large amount of water used it has been impracticable to carry on the experiments in distilled water. They were conducted in water such as the fishes had been kept in.[6]

COCAINE.

Only a few experiments were tried with this as the fishes were positive to all concentrations tried. In 0.35 Gm. of the hydrochloride per liter the goldfishes were positive at once, *i. e.*, turned back on encountering the pure water (Graphs 3 and 4). They became intoxicated and died in the high concentration end. No reactions such as follow peripheral stimulation with CO_2 were noted. The graphs show that after two or three minutes' exposure and a few turnings they remained in the higher concentration of the drug.

ETHYL ALCOHOL.

Goldfish were positive to 1.4 percent alcohol, as shown in Graph 4. Waters with less alcohol or no alcohol were quite consistently avoided. Their reaction to 0.5 percent is usually negative. Their reaction to 1 percent alcohol was positive and remained so consistently for two hours, when some nervousness and excitability occurred which lasted for five hours more in which the fishes spent most of their time in the more dilute alcohol of the center of the tank, but avoided

[6] For analysis and comment see Wells, *Biol. Bull.*, 29, 226–227.

the pure water. When 2 percent alcohol was used they remained clearly positive for six hours. With 3 percent alcohol they remained clearly positive for three hours, when they became nervous and slightly tipsy. In this condition they appeared not to note the difference between the two ends, but still spent most of the time in the alcohol end. Their reaction was decidedly positive to 10 percent alcohol. They occasionally moved toward the low concentration but turned back quickly on encountering a slight decrease in concentration. At the end of 20 minutes they were semi-intoxicated and the experiment was discontinued. In 20 percent alcohol they avoided the full strength but still gave a positive reaction for the short time they were under observation.

MORPHINE.

They appeared not to note 0.15 Gm. per liter of morphine hydrochloride, as shown by Graph 5, where the drug was not avoided, but no good evidence of any preference shown. In 1 Gm. per liter one fish showed a positive reaction throughout, while the other spent a little time in the pure water. Other individuals avoided the strongest morphine and pure water staying in the center of the tank and turning back from both ends.

NAPHTHALENE.

Goldfish are positive to half saturated and saturated solutions as shown in Graphs 7 and 8. It is only very slightly soluble but sufficiently so to kill fishes in an hour or more.

OTHER SPECIES.

Minnows of the genus *Pimephales* were found, in course of my experiments on pollution, to be more often negative than other species. This species was uniformly negative in reaction to alcohol up to three percent. After being kept 20 hours in $^1/_4$ percent it was negative to 1 to 2 percent, more negative than when kept in water. Fishes kept one-half hour in $^1/_2$ percent gave positive reaction to 1 to 2 percent; others kept 20 hours in $^1/_2$ percent showed a more positive reaction, showing that the preference for alcohol is developed by exposure to it, but that the fish is negative to concentrations to which the goldfish is positive.

TADPOLES.

A single experiment with a tadpole and 20 percent alcohol showed the animal positive and suggested the use of tadpoles about to transform into frogs as affording a well-known laboratory animal for such studies.

CONCLUSIONS.

These incidental preliminary observations indicate the following tentative general considerations:

a. That fishes quickly form a preference for water containing alcohol, cocaine, morphine, and certain other substances. They appear, as a rule, to avoid very weak concentrations and are in nearly all cases less positive at first. This with the habituation of minnows usually negative to alcohol by an exposure of 30 minutes in $^1/_2$ percent alcohol indicates that the sensory endings are quickly modified in their sensitivity.

b. The gradient tank may afford a means of studying "habit" formation and also of investigating compounds or combinations of drugs which may produce the desired therapeutic effect with least danger of creating an appetite. Results with fishes may differ from those obtained with man, but they may readily afford information which can serve to interpret results with higher forms.

ZOÖLOGICAL LABORATORIES,
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RAPID GENERAL ASSAY METHOD FOR ALKALI SALTS OF ORGANIC ACIDS.

BY A. B. LYONS.

Ignition of salts of organic acids is a tedious operation, even if one is satisfied merely with thorough carbonization of the organic compound. In the official general assay process (U. S. P. IX, p. 589) this is all that is required, yet the plan of dissolving out from the carbonized residue the alkali carbonate with aid of volumetric acid and heat, filtering out the carbon and washing out all the residual acid, calls for a considerable expenditure of time and labor.

It has been suggested by E. Elvove that conversion of the salt into a *sulphate* is to be preferred to simple ignition resulting in the formation of a carbonate, and no doubt equally good results can be obtained by this procedure. There is, however, no gain in time consumed, but by a very simple modification of the process it is made far more rapid than either of the other methods, with no sacrifice of accuracy in the results.

The following is the new procedure: Weigh accurately in a small beaker about 0.5 Gm. of the salt, add 20 mils of alcohol, to which has been previously added 10 drops of strong sulphuric acid, from a pipette delivering 60 drops to the mil. Stir the mixture well and let it stand a few minutes, then decant the alcoholic solution into a platinum or quartz dish. Wash the residue in the beaker by decantation with two successive portions of alcohol (5 and 3 mils), adding the washings to the dish. Set fire to the alcohol and allow it to burn off, then ignite the residue at a temperature not exceeding dull redness. Since the residue consists almost wholly of the organic acid of the salt, together with a little free sulphuric acid, the carbon will burn off, in a very short time, the ignition requiring no attention meanwhile.

Dissolve the residue of alkali sulphate in the beaker in a little hot water, and when the carbon has been practically all burned off from the first residue, cool the dish and add to it the sulphate solution, together with rinsings from the beaker. Evaporate the solution in the dish to complete dryness and ignite at a red heat until white. Cool in a desiccator and weigh as alkali sulphate.

Since the sulphate has not been in contact with carbon to any appreciable extent during the ignition it may be considered to consist (barring impurities in the salt) wholly of alkali sulphate. However, if there is any doubt about this, the salt may be dissolved in a little hot water, a drop or two of sulphuric acid added, the solution evaporated, and the residue once more ignited.

It is assumed in these general assay processes that the salt is substantially free from impurities. The Pharmacopoeia in each case provides tests which exclude most of the impurities which would affect the result of the official assay. The question arises whether in an assay based on conversion of the salts into sulphates the result will be equally guarded by the pharmacopoeial purity requirements. It is evident that an impurity which increases the weight of the sulphate vitiates the result of the assay by the sulphate method, while the presence of the same impurities in the carbonate residue of the official assay does not affect the result unless they increase or diminish the alkalinity of the residue. Hence, if the sulphate method is resorted to, the question of the possible presence in the salt of fixed impurities not excluded by pharmacopoeial purity requirements must be kept in mind. The impurities most likely to be present in alkali salts for the detection of which pharmacopoeial tests are wanting or inadequate are sodium and potassium, and not infrequently magnesium and calcium. These impurities (not likely to be present in any large proportion) will affect the result of an assay either by the carbonate or the sulphate method, the former to a greater degree than the latter. One must bear in mind, however, the fact that where such impurities are present the result reached by the U. S. P. assay does not accurately represent "the amount of salt contained in the sample," as is assumed in the rubric of purity of the respective salts.

FACTORS FOR CONVERTING SULPHATE INTO ORGANIC SALT.

Lithium Citrate Cryst., $Li_3C_6H_5O_7 + 4H_2O$	1.709
Lithium Salicylate, $LiC_7H_5O_3$	2.619
Lithium Benzoate, $LiC_7H_5O_2$	2.328
Potassium Acetate, $KC_2H_3O_2$	1.115
Potassium Benzoate, Cryst., $KC_7H_5O_2 + 3H_2O$	2.458
Potassium Benzoate, Anhydrous, $KC_7H_5O_2$	1.838
Potassium Bitartrate, $KHC_4H_4O_6$	2.158
Potassium Citrate, Cryst., $K_3C_6H_5O_7 + H_2O$	1.241
Potassium Citrate, Anhydrous, $K_3C_6H_5O_7$	1.172
Potassium Lactate, $KC_3H_5O_3$	1.471
Potassium Salicylate, $KC_7H_5O_3$	2.022
Potassium and Sodium Tartrate, Cryst., $KNaC_4H_4O_6 + 4H_2O$	1.619
Potassium and Sodium Tartrate, Anhydrous, $KNaC_4H_4O_6$	1.206
Potassium Tartrate, Cryst., $K_2C_4H_4O_6 + {}^1/_2H_2O$	1.350
Potassium Tartrate, Anhydrous, $K_2C_4H_4O_6$	1.298
Sodium Acetate, Cryst., $NaC_2H_3O_2 + 3H_2O$	1.916
Sodium Acetate, Anhydrous, $NaC_2H_3O_2$	1.155
Sodium Benzoate, $NaC_7H_5O_2$	2.028
Sodium Bitartrate, $NaHC_4H_4O_6 + H_2O$	2.676
Sodium Citrate, Cryst., $Na_3C_6H_5O_7 + 2H_2O$	1.380
Sodium Citrate, Anhydrous, $Na_3C_6H_5O_7$	1.211
Sodium Lactate, $NaC_3H_5O_3$	1.577
Sodium Salicylate, $NaC_7H_5O_3$	2.253
Sodium Tartrate, Cryst., $Na_2C_4H_4O_6 + 2H_2O$	1.619
Sodium Tartrate, Anhydrous, $Na_2C_4H_4O_6$	1.366

BACTERIOLOGY, ITS RELATION TO PHARMACY AND ALLIED SCIENCES.*

BY LOUIS GERSHENFELD.

Bacteriology is an infant of many affiliations, always displaying unusual talents and with the possibility of attaining its maturity in the near future. Forced to await the perfection of instruments of magnification, it remained for the Jesuit Kircher, and the Dutch linen draper, Leeuwenhoek, in 1675, to pave the way for the birth of this science. Though the latter, as well as other pioneers of the seventeenth century, had foreseen the parasitic theory, many authors denied it while others admitted it only as a daring supposition, inasmuch as a positive proof supporting such doctrine was always wanting. Agostino Bassi, a Lodigian physician (born in 1773), may be proclaimed as the true founder of the doctrine of pathogenic microbes. The works published by Bassi in 1835 are sufficient proof to convince anyone that he was a precursor of Pasteur and Koch, as well as the founder of the entire doctrine. His work does not fail to make a profound impression, but this ably formulated doctrine entered but slowly into the domain of science, until 1850, when Dovaine, together with Rayer, demonstrated a specific pathogenic microbe as the direct agent of a general infective disease (anthrax).

Numerous investigations were begun and due to the excessive enthusiasm in the acceptance of the parasitic doctrine, the insufficiency of the methods of research were frequently supplied with the imagination of the experimenters. Due to this fact, the edifice, so ably raised, quickly crumbled under the blows of the stringent criticisms of different investigators, and everything thus far formed as an aid, together with the doctrine itself, fell into discredit. It is not my intention in this theme to repeat the history of this long conflict (for a complete account is described in Loeffler's work on "The Development of Bacteriological Doctrine").

Bassi's fundamental ideas, more fully developed by Pasteur with his different studies, were not accepted, however, until after the publication of Koch's researches on infective diseases, in 1878. The latter's work was made possible due to the improvement of technique that was made available, after the introduction of the microscope with immersion objectives (invented by Amici and improved by Stephenson), and the discovery of the use of aniline dyes by Weigert in 1875.

Thus, briefly stated, is what took place before science began to satisfy one of its supreme aspirations, *The Knowledge of Causes*, and yet have within its realm one of the greatest of branches that interests both mankind and the universe. Thus brought forth by man's eager and active desire to *know*, bacteriology was soon put into service to help and to save. The problems encountered were touched by botanists, physicians, chemists, pathologists, physiologists, physicists and pharmacists; and their solution soon shed light upon biological principles of the broadest application. Pathology, especially experimental pathology, was recreated and physiology was soon linked with it. New life was given to zoölogy and botany received additional inspiration. By the methods used in studying the pathogenic bacteria, contagion was made apparent and modern hygiene (personal as well as industrial), public health sanitation and preventive medicine

* Read before Philadelphia Branch, A. Ph. A., May 20, 1918.

thus became established. Who knows if surgery would have ever developed would not bacteriology have supplied its chapter of antisepsis? And apart from the sciences, I doubt if there is a field of human activity that is not already calling upon bacteriology to assist it in its progress. Agricultural pursuits and industries, too numerous to mention here, have and are extending their hands to receive it.

The scope of bacteriology, as one may thus see, is a wide one, with numerous fields and avenues before it, as yet undeveloped. All this time this branch of science has been held under sway by those closely allied members of science that claim to be her *Pater*, though in reality, bacteriology has been produced because of the necessity of the finding of a brother to keep the brotherhood of science intact.

With a definite purpose, the teaching of bacteriology has come in a comparatively brief time to play a very important part in the scientific education of all; and bacteriology is being taught now in most all of the educational institutions. But is the bacteriologist usually thoroughly trained? Has he a broad foundation upon which to erect a sound superstructure? Can a finished product be evolved from a knowledge of bacteriology which has been acquired in the short period of six or eight weeks of a regular college course? and still fit one to handle this vast subject as it is applied to domestic science, agriculture, botany, dairying, water and sewage purification chemistry, pharmacy, medicine, dentistry, veterinary medicine, public hygiene and sanitation, pathology, industrial hygiene, the industries at large, etc. The range of activity and influence of this subject is indeed large and I contend that it is impossible to confine it to the usual curriculum of the medical school only. As a science, bacteriology, though borrowing and giving to other fields of study, possess its own technique and its own methods of investigation and experimentation; and I think the time is close at hand when we will see this field subdivided into its different avenues, as has been found necessary when dealing with chemistry and other sciences. The future of bacteriology is rich in alurement of interest, in promise of results and in a greater possible benefit of mankind.

What would bacteriology be to-day had there been no Pasteur, the chemist? What would bacteriology do to-day without Dakin, the chemist? Yes, and what would bacteriology, as a whole, amount to without its assistance of that closely related science, chemistry? And still it is a known fact that few bacteriologists are not even familiar with the elementary principles of chemistry, which is not only an adjunct but essential to every student in bacteriology, so as to have a correct understanding of what is before him.

This is in addition to the broader and greater problems before us which may be classified under biochemistry and animal or plant physiology, where extensive training in both bacteriology and chemistry is an absolute necessity.

With the realization of what is before her, bacteriology is just beginning to emerge from her peculiar state of disorder and it is time for pharmacy, as a science among other sciences, to quickly realize her own chaotic position and take advantage of what is before her and what bacteriology has to offer. Not since the days of Pasteur (when numerous pharmacists were coöperating with him in his field

of endeavors) was there a more appropriate time for the professionalizing of pharmacy than there is at present during prevailing conditions.

The average graduate from a reputable pharmacy school (especially if the student was a high school graduate) has had a sufficient preliminary training in inorganic, organic, and analytical chemistry, preliminary bacteriology and hygiene, and allied subjects to be able to take advanced post-graduate study (at least one year) in chemistry, bacteriology and advanced pharmacy, to quite readily assume the responsibilities and master the situations that will confront him in a professional pharmacy, where the many-sided problems should be more of a scientific and of a professional character, rather than commercial, if pharmacy is to still keep its roll among the sciences. Students thus trained to deal with medical bacteriology, perform the commonly applied clinical tests and further apply their knowledge in quest of scientific research, will greatly benefit themselves financially, socially and otherwise; and they will raise pharmacy to that high professional standard that it should and I hope will possess.

Let us all remain alert and take advantage of that which bacteriology has to offer us and which pharmacy can well handle. Let us approach it with the right spirit and with this most fertile field for study and investigation let us try to bring pharmacy back to where we all (I am sure) would like to see it and where it rightfully belongs.

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THE USE OF SACCHARIN AS A SUGAR SUBSTITUTE.*

BY SAMUEL T. HENSEL.

The United States Government having restricted the use of sugar employed by the druggist to the extent of 20 percent of his requirements, we are confronted with the problem of meeting this restriction in the most practical way.

Various substitutes for sugar have been recently suggested, some of them absurd, and all of them of doubtful utility.

In my opinion, the very best way to conform to this regulation is to make up the 20 percent reduction in sweetening power entailed by governmental requirement, by the employment of an equivalent amount of saccharin carefully calculated with respect to its sweetening power, and mathematically correct.

Such a method I am prepared to suggest, and herewith present the same in detail.

In view of the present status of saccharin, it would of course be necessary to secure permission from the United States Food Administration, basing our plea for the necessity of its use as a temporary recourse, to be employed for the period of the war only.

I am of the opinion further, that much of the prejudice against saccharin heretofore existing, has been the result of unsupported statements which have been made against the use of that substance.

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* Read before Denver Branch, A. Ph. A., May meeting, 1917.

According to the *London Lancet*, there is evidence that saccharin does not appear to produce harm to the human organism, and that since the compilation of that evidence last September, there is still no ground for thinking that it is in any way harmful.

My plan is very simple, entails no additional expense to the druggist, and will solve the problem completely, preserving an important department of our business from disaster and at the same time sustain us in our efforts to serve the public with a pure and wholesome product.

As you all know, 100 pounds of granulated sugar or crystal A, when subjected to percolation, will yield 13.7 gallons of syrup having a density or specific gravity of 1.320 representing 65.5 percent of sugar. Now since $\frac{100}{13.7} = \frac{80}{x}$ we find the value of x to be 10.9 gallons, therefore, 13.7 — 10.9 = 2.8, the amount of water to be added to the percolate of 80 pounds of sugar.

The employment of the following solution of saccharin will provide the equivalent of the sweetening power of the 20 percent reduction required by the Government:

Take	
Saccharin	235 grains
Sodium bicarbonate	117.5 grains
Alcohol	1½ fluidounces
Water sufficient to make	2.8 gallons

The above solution[1] when added to 10.9 gallons of concentrated syrup, will make the same volume of syrup as that obtained by the percolation of 100 pounds of sugar, its specific gravity will be less than the former, but its density will be nevertheless sufficient to assure its freedom from fermentation, and consequently its quality as a preservative of many of the delicate fruit flavors.

A syrup of this composition will represent a 1 : 4000 solution or approximately 1/10 of a grain of saccharin in the fluidounce of syrup, an amount so small as to be negligible when compared with the medicinal dose of that substance, which is from one to five grains.

The above combination will represent the sweetening power of 100 pounds of sugar, when saccharin of the highest purity is employed.

When saccharin was first introduced, it had a reputed sweetening power of from 250 to 300 times that of sugar, it was also known that the then commercial quality consisted of from 40 to 60 percent of an inert or nonsweetening substance. Since then, saccharin of the highest purity has been obtained possessing a sweetening power of from 550 to 600 times that of sugar, and it is to this product that I refer.

Before I close, I would like to say that the saccharin used in this way is not intended to replace the food value of the sugar displaced, and that should the

[1] Editor's note.—Mr. Hensel makes the statement, "that the density of the syrup will be sufficient to assure its freedom from fermentation." As the addition of the saccharin solution is a simple dilution, it is not necessary to reduce a large volume of syrup for stock until individual experiments have proven satisfactory. In some states the use of saccharin is not permitted in soda fountain syrups, though probably, under present conditions, permission would be granted by the State Food Departments.—Since this was written further restrictive orders have been issued.

United States Food Administration at any time in the future deem it advisable to further restrict the supply of sugar, the proposed method will serve as the basis of a sliding scale, which can be readily adjusted from time to time.

Great Britain, according to the *Lancet*, has taken control of the entire output of British saccharin which is to be distributed under supervision of the British Food Administration, having in mind its sweetening power; therefore its availability to displace the sugar employed by the British public in the use of tea and coffee, and with no reference to its food value.

INVERSION OF SUGAR IN U. S. P. SYRUP.*

BY G. W. LLOYD PLETTE.

Observing that certain concentrated sugar solutions developed more or less invert sugar after standing for a time, when at first they contained none of the single sugar or at least a mere trace, the question arose as to the cause of the inversion of the sugar: whether it was due to the action of molds or bacteria, or whether conditions of storing with reference to light and temperature might have been responsible for the change.

Simple Syrup, or the *Syrupus* of the U. S. P. IX, is a 64.7 percent by weight solution of sugar in water. It seems that the best quality of cane sugar—"Crystal A"— is preferred for the manufacture of this syrup.

In the investigation of this question, samples of syrup were made up by both methods mentioned in the U. S. P., *viz:* the "hot" and "cold" methods, and stored under as large a number of different heat and light conditions as possible. The samples were prepared on the 10th of February, this year (1917), and were analyzed for glucose at regular intervals until June the 9th, the volumetric estimation of glucose with Fehling's solution being the method employed. The following results were obtained:

The first sample, made by the cold method and stored in a warm, dark place, showed 45.5 percent glucose after the four months.

The second, made by the cold method and stored in medium light and changeable temperature (almost exact drug store conditions), showed 25.5 percent glucose.

The third, made by the cold method and stored in a cold, dark place, showed only 10.7 percent glucose.

The fourth sample was lost.

The fifth, made by the "hot" method and stored in a cold, dark place, showed only 8.93 percent glucose.

The sixth, made by the hot method and stored in a warm, light place, showed 11.1 percent glucose.

The seventh, made by the hot method and stored in a dark, warm place, showed 16.67 percent glucose.

The eighth, made by the hot method and stored in a cold, light place, showed 15.15 percent glucose.

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*Read before Scientific Section, A. Ph. A., Indianapolis meeting, 1917.

The samples were stored in 4-oz. bottles and were shaken daily, in order to prevent a dilution of the top of the liquid, which would serve as a good medium for the growth of any kind of bacterial or mold contamination.

The first observation worth noting is that the syrup, made by either hot or cold method, seemed to be freer of glucose when stored in a cold, dark place.

In spite of the fact that the bottles were shaken daily, all of them developed a fungus growth after a few weeks, and this continued to develop regardless of the high concentration of the syrup. The first bottle gave off a slight alcoholic odor, and the cork "popped" when drawn, suggesting CO_2. The second showed CO_2, but the alcohol was not noticeable. Neither of these were noted in the others, all of which contained a lesser amount of glucose than the first two.

When cultures were made of the different syrups both on agar and gelatin, the latter showed practically no growth, but the agar showed much gas formation and a strong alcoholic odor, signifying the presence of yeast, which was later verified by the microscope. The gas formed under the agar in both aerobic and anaerobic cultures, and was sufficient in each case to raise the agar up in large lumps. The anaerobic culture showed some short, thick rods when stained with methyl violet. These seem to have been a contamination of some kind, as there were very few and there was no fetid odor characteristic of most bacterial growth.

In addition to the yeast cells there was a mold, which proved to be *Penicillium glaucum*. It seems that the mold was almost, if not entirely, responsible for the inversion, as the mold was most abundant in the samples which showed the largest amount of glucose, and these bottles were also the ones which were stored under conditions most favorable to the growth of the fungus, both as to light and temperature.

Therefore it would appear that the best conditions for the storage of syrup are as follows:

The syrup should be stored in full bottles in a cold, dark place, and shaken daily or perhaps twice in a day, in order to preserve the highest degree of concentration and thus keep a thoroughly sterile preparation. There is probably no advantage as far as inversion prevention is concerned in either the hot or cold method of preparing the syrup.

WANTED—THE OLD-FASHIONED PHARMACIST.*

BY J. W. ENGLAND.

Under the caption of "Wanted—The Old-Fashioned Doctor," the following editorial has recently appeared in the Philadelphia *Public Ledger:*

"As the shortage of doctors continues to make itself manifest in civilian life, it is being made clear to the most thoughtless that what the medical schools should turn out in greater numbers and what the country needs is the good, old-fashioned, all-round general practitioner. In many ways the tendency of medical education of recent years toward concentration in the matter of schools and extreme specialization and standardization has not only reduced the number of doctors as a whole, but seriously cut down those who cared for or were trained for general

*Read at meeting of Pennsylvania Pharmaceutical Association, June 1918.

practice. It is now seen that this practice was not altogether the wisest of courses. The highest of standards for admission to medical schools, it may be said, should be maintained in these days of advanced sanitation and advanced methods of preventive medicine; but with these high standards, which have had the effect of cutting down the supply of students, and therefore of doctors, it would seem as if something should have been done before the war to increase the attractiveness of the medical profession, and, what is more, instead of forcing the issue as to specialists, give the general practitioner a dignity and opportunity which for a number of years have been denied him.

"As a consequence, the depletion of the specialists, not only the surgical specialists, by the war, has left the medical profession available in civil life scant in numbers and with altogether too few who are indisputably general practitioners and truly understand the 'art of healing.' For healing is an art, and it depends more largely than many think on individual equation plus the science of medicine as it is obtained in the schools, the hospitals and the daily practice. * * * As it is, if the war continues, the great need of utilizing the general practitioner for all sorts of service from which he is now cut off by the detailed specialization which rules will be pressed home on every one.

"The medical educators, however, naturally are not blind to the situation and to some of them what is happening will be viewed as a case of 'I told you so.' At all events, as all schools and colleges are looking to their methods with a view of determining their practical relation to the output, it would seem as if the medical schools are in need of some genius who will plan for them a system which will turn out more old-fashioned doctors and leave the necessary specialization to be carried on by relatively small groups of laboratory workers, while the doctors serve the community as a whole and along broad and general lines, applying the hospital and laboratory facts by the bedside, in the home and in the office as occasion calls for."

The shortage of the "good, old-fashioned, all-round general practitioner" is not only quantitative, by reason of fewer medical schools and fewer students, but qualitative, also, by reason of the extreme standardization of the medical sciences and art taught in the schools and the overspecialization of medical practice.

The practice of medicine to-day is in a state of evolution. The older practitioner has a firm faith in the use of drugs for the treatment of disease. The newer practitioner has little faith in drugs and much concerning preventive medicine.

The scientific exactness of the sciences applied in preventive medicine—bacteriology, immunology, hygiene, sanitation, etc., and the brilliant results they have yielded in conserving human life, have appealed powerfully to the imagination of the medical profession, especially when contrasted with the apparent lack of scientific precision in the use of drugs, which lack, by the way, is more apparent than real.

Many of the medical schools unduly emphasize the importance of preventive medicine and minimize the importance of materia medica and therapeutics, so that therapeutic nihilism has grown apace and drugs are being used, less and less, by the younger men, at least, in the treatment of disease, although, it is but fair to add that some of the most prominent schools and teachers of the day recognize the value of drugs and are staunch advocates of their use.

The indirect result of this trend, however, has been that there is less and less demand by physicians of pharmacists for professional services; and yet many

physicians condemn pharmacists for the too largely non-professional character of pharmacy. If the practice of pharmacy in the retail drug store of to-day is not as professional as it should be, the fault is chiefly with the medical profession, by reason of its neglect of materia medica and therapeutics, although the pharmaceutical profession itself is by no means blameless.

As usual, in medical history, the pendulum has swung from one extreme to the other. Formerly, drug therapeutics was everything in medical practice and preventive medicine a dream; now preventive medicine is everything and drug therapeutics is nothing, relatively. The truth is, of course, between the two extremes. There is a brilliant future for preventive medicine, but there can be, also, an equally brilliant future for drug therapeutics. It is most desirable, of course, that every step be taken to prevent disease; but when disease is present, the patient does not care then to know how he got it, or how he can avoid getting it again; what he wants to know is what relief he can get *now*. He is not particularly keen about being "an interesting case" *only* to his physician! He wants something done, being of the opinion of Jacobi, that, "Those who die, die 100 per cent."

Some one has said that the medical profession has "run after false gods" and "fallen down on its job," that it does not get as successful clinical results as it did when drugs were more generally used (the death rate of pneumonia, for example, twenty-five years ago was 25 percent; to-day it is from 30 to 50 percent), and that in consequence, the confidence of the public in physicians has become so weakened that osteopathy, Christian science, and patent medicines particularly, have obtained their present widespread vogue.

But, whether this is true or not, the fact remains that thousands of years of clinical experience have shown that drugs, rightly used, have real possibilities of usefulness in clinical conditions. It may be that the results gotten cannot always be explained with modern scientific exactitude—the individual drug reaction in the treatment of disease may be too variable to do so—but this does not justify the neglect of materia medica and drug therapeutics shown by many of the medical profession in recent years.

Drugs have positive clinical values, and these should be as accurately determined as possible to the end that the wheat may be separated from the chaff and utilized for the benefit of sick humanity. If empirical therapeutics is anathema from a scientific viewpoint why not develop rational therapeutics, as advocated years ago by Dr. Horatio C. Wood, the ablest therapeutist American medicine has ever produced?

The old-fashioned doctor with his intimate knowledge of the possibilities and limitations of drugs in the treatment of disease is being superseded by the new-fashioned doctor who thinks chiefly in terms of preventive medicine; and unless the medical profession awakens to the very serious dangers that menace it through its neglect of materia medica and drug therapeutics, with the consequent insufficiency of clinical results and the weakened confidence of the public, the influence and prestige of the medical profession will be seriously imperiled.

The medical profession needs nothing to-day so much as to be born again in a new faith in the rational use of drugs for the treatment of disease, both to

ensure and promote the growth and development of the science and art of medicine and for the better preservation of the health and lives of the people.

And when this is done, then the old-fashioned pharmacy and the old-fashioned pharmacist will again come into their own. God speed the day!

MANUFACTURE OF AMPOULES.*

BY CHARLES L. BARTHEN.

The methods as well as the advantages of administering medicinal remedies, hypodermically, by means of Hypodermic Tablets, Biological Serums, Antitoxins, etc., are well known. But "ampoules" which are hermetically sealed, glass bulbs, containing standardized and sterile, aqueous or oil solutions of drugs or medicinal chemicals, are considered as comparatively new products on the North American market, although they have been in very common use in Europe and South America for a great many years.

With but very few exceptions the content of ampoules are specifically intended for subcutaneous, intramuscular or intravenous injections; therefore possess all the advantages that hypodermic administration affords.

There are, however, three paramount advantages to be gained by the use of ampoules; namely, convenience, accuracy of dose and the ready to use sterile product.

In view of the facts I have just stated, it is reasonable to expect, that the greatest care, accuracy and aseptic conditions should be observed in the manufacture of ampoules, so that even the most exacting physicians will not hesitate to use them.

I shall endeavor to outline in detail the manner in which ampoules are manufactured in the Laboratory where I am employed.

Manufacturing and Filling of Solutions.—Ampoule solutions with very few exceptions do not contain any material other than the actual medicament and the solvent. The solutions must be neutral in reaction or as near neutral as possible, so that when injected they will not cause any irritation, pain or shock. Therefore they are standardized by chemical tests and assays. As a demonstration I will cite a few examples. Sodium Cacodylate solutions must be very faintly alkaline, and free from Cacodyl, the ester of Cacodylic Acid, which is objectionable. Alkaloidal solutions, such as Quinine, Morphine, Atropine, Strychnine, Emetine, etc., must be faintly acid. Solutions of iron salts must be neutral. Solutions of Adrenalin, Pituitrin, Ergot, Strophanthus, and similar products, are submitted to a physiological assay. Mercurial compounds contain some local anesthetic, because there is no other means of preventing them from causing pain, without changing their very nature.

Filtering.—The solutions are filtered first through paper, then through a Berkefeld or Pasteur filter, the latter preferably because it is more dense. The solutions are forced through the filters with compressed air, and the filtrate received in sterilized bottles. Bacteriologists claim that the solution as it leaves the Pasteur filter is sterile.

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* Read before Detroit Branch A. Ph. A., April meeting, 1918.

Empty Ampoules.—The empty ampoules are made from thoroughly annealed and alkali-free glass tubing. If the glass were not thoroughly annealed, the ampoules would not only be brittle but would crack and break when heated at the high temperature which is necessary to sterilize them. If the ampoules were not made of alkali-free glass, the excess alkali would cause the precipitation, in time if not immediately, of a great many drugs or chemicals from neutral or faintly acid solutions. This is especially true of the alkaloids and iron compounds. In the case of Adrenalin and Pituitrin, complete decomposition takes place in a very short time if there is the slightest excess of alkali present.

The test which we apply to determine the alkalinity of the glass is as follows: The ampoules are filled with a neutral phenolphthalein solution and sealed, then placed in a steam bath and heated until the solution assumes a pink tint, noting the time it requires for this reaction to take place. Some ampoules will cause the solution to turn pink immediately and others will have no effect on the solution after heating for 24 hours. We do not accept any glass that will not meet a test of three to five hours.

The tubing is thoroughly washed and dried, and the ampoules are made with the stems sealed, thus preventing any dust, etc., from getting inside of them. The empty ampoules are sterilized with dry heat at a temperature of 160° C., for one hour, allowed to cool, and just before filling the sealed end of the stem is cut off.

Filling of Ampoules.—Before a process or method of manufacture of a new product can be perfected a considerable amount of experimenting has to be done. This has certainly been true of ampoules. Without a doubt the greatest difficulty encountered in the manufacture of ampoules, has been to obtain a suitable and efficient method of filling each and every ampoule, with an accurately measured amount of clear and sterile solution. You can take a hypodermic syringe, draw in a definite amount of solution and expel it into an ampoule; this is an accurate but very expensive way, or you may fill ampoules by means of a burette, but the success of this method depends entirely upon the eye and accuracy of the operator. After constantly experimenting for years, we have adopted machines that put exactly the amount of solution we desire into each ampoule; these machines fill from 25 to 35 ampoules a minute. The ampoules are then sealed by means of a blast lamp, the heat of which softens the glass, and the edges of the stems are welded together into a solid mass, making a hermetic seal. After filling there always remains, in the stems, a very small amount of solution, which sometimes causes considerable trouble when the ampoules are sealed, particularly with solutions of Caffeine and Sodium Benzoate, and Sodium Cacodylate. These salts when heated with the glass combine with it, making the tip of the ampoule so brittle that the slightest jar will cause it to crumble or fall off. In the case of Quinine Salts the intense heat causes the Quinine to char, so that when the ampoule is agitated, you will notice small specks of charcoal suspended in the solution.

To obviate the troubles just mentioned we wash down this liquid with a little distilled water.

Sterilizing after Filling.—In spite of all the precautionary methods we may adopt in order to maintain aseptic conditions while handling the solutions, apparatus and ampoules, there is a possibility of the solution becoming contaminated

with bacteria. To insure the sterility of the product, the ampoules after filling and sealing, are placed in sheet metal boxes, the top and bottom of which are made of metal screening, and then sterilized by means of steam or hot water, at a temperature the product will permit, for 15 minutes to 1 hour, on each of 3 consecutive days. The temperature is never less than 60° or more than 100° C. You might ask the same question that has so often been submitted to us in the form of a suggestion, as a measure of economy and convenience. "Why don't you sterilize all your ampoules in boiling water for 1 to 3 hours and accomplish the task rapidly, efficiently and economically?" As an answer to this question I will try to explain to you the necessity and what the advantages are of so-called fractional sterilization.

A great many of these delicately adjusted ampoule solutions cannot be subjected to the temperature of boiling water, for the length of time necessary to sterilize them, without partially, if not completely, decomposing the product. Consequently these solutions will no doubt be sterile, but they will have little or no therapeutic value.

The majority of bacteria with which ampoule solutions are liable to be contaminated, can be destroyed at the comparatively low temperature of 60° C. Many of these bacteria are spore-bearing, and while the bacteria can be destroyed at 60° C., the spores are resistant and can only be destroyed at the high temperature of 100° C.

A spore is a minute ovoid body in certain organisms, which gives rise to new organisms by germination. As for example, a solution may be contaminated with spore-bearing bacteria and sterilized at 60° C., on the 1st day the bacteria would be destroyed, but the spores will only be incubated and inside of 12 to 24 hours develop into bacteria; on sterilizing the 2nd day, this newly developed bacteria would be destroyed, and if any spores remained, that were not incubated during the first sterilization, which is very probable, they will be incubated during the second sterilization, and then develop into bacteria, which would be destroyed by sterilizing on the third day. After the ampoules have been sterilized, samples are sent to the Biological Department, where a bacteriologist tests them for sterility. It requires 5 days to complete this test.

To detect imperfect sealing, flaws in the glass, which up to this stage of the process did not appear, and cracks caused by being jostled about in the sterilizing boxes, we submit the ampoules to what we term a Blue Test.

Blue Test.—The blue test is made in the following manner: The metal box, containing the sterilized ampoules, is placed in a vacuum box that is partially filled with water in which is dissolved a small quantity of methylene blue. The cover of the vacuum box is clamped down and suction applied, which draws out the solution from the defective ampoules; then when the vacuum is broken by opening the air vent, the air, as it enters the chamber, forces the methylene blue solution into these defective ampoules.

Washing.—The ampoules are washed by immersing the box containing them first in warm soap suds, then clear water; those containing blue water are picked out and discarded, and the perfect ones are set aside to drain; they are then ready for finishing.

Finishing.—The special shaped ampoules are labeled and cartoned by hand; the others by machine. We have machines that label from 50 to 60 ampoules a minute, and carton them at the rate of 40 to 50 a minute. The ampoules are so packaged that they are always in an upright position, and the stems well protected, so that they will come into the consumers hands in a perfect condition.

In order to maintain aseptic conditions in the department where ampoules are manufactured, it is absolutely essential that everything must be kept scrupulously clean. All cleaning and dusting should be done at night or at a time when manufacturing is not in progress. All employees in the department are clothed in white uniforms, not for the sake of appearance, but to impress upon them the necessity of cleanliness.

LABORATORIES OF PARKE, DAVIS & CO.,
DETROIT, MICHIGAN.

IF THE DRUGGIST'S LANDLORD RAISED HIS RENT WOULD HE BE JUSTIFIED IN ACCUSING THE LANDLORD OF PROFITEERING?*

BY FRANKLIN M. APPLE

In these stirring, troublesome war-times one repeatedly hears of profiteering; also of increases in rent, and frequently the profiteering and rent-raising accusations are directly associated.

The latter cases are the ones we will take up briefly for consideration, and endeavor to ascertain if there is any justice in the charge that an increase in rent, at this time, by a landlord justifies the accusation that he is a profiteerer.

In order that we may reach a clear and just decision, it is absolutely necessary that we carefully analyze the question, and "lay upon the table," as it were, the facts in the case as they apply to both parties concerned.

What are the facts involved?

The landlord supplies the property, which represents an investment of his funds, from which he is entitled to a fair net return, as interest earned by said funds.

The druggist supplies the tenant, upon whom the landlord depends, for income from his investment in the property, for, if the property were unoccupied, it would prove to be a source of expense instead of a source of income to the landlord; hence it can be seen that each one is a benefit to the other one.

The question as to profiteering upon the part of the landlord, quite obviously, depends upon the amount of net income he demands from his funds involved.

I will call your attention to the fact that I lay stress upon the question of *net income* enjoyed by the landlord as a reward for the use of his funds, the care needed in overseeing the upkeep of the property and the risks assumed by him.

Let us consider some of the facts in the case that cannot be ignored.

When considering the question of upkeep of a property we are confronted by the cost of materials and the demands made by the artisans and the laborers for their skill and labor, and everyone who has had any experience along this line can vouch for the unprecedented advance in price of these essential factors. When

* Read before the Pennsylvania Pharmaceutical Association, 1918 meeting.

one observes in the daily papers that carpenters are offered seventy-five cents (or more) per hour, with time-and-a-half to double time allowances for time over 8 hours per day, we can judge of the deductions the landlord must make from his gross income (rent the tenant pays) from his property. A few days ago I was informed by a friend, who is a carpenter, that one of his fellow workmen had earned $91.00 the previous week, having worked considerable overtime at the advanced rate offered for such extra hours of labor.

A recent experience with a plumber, who supplied about 3 feet of 1-inch black iron pipe, an elbow of the same size and one washer, for which a charge of $1.00 was made, and a charge of $2.50 per hour for a plumber and helper, shows what allowances must be made for repairs to the plumbing system of a property by a landlord.

What is true of plumbers and carpenters is true of other skilled artisans and unskilled laborers are offered at least 35 c. per hour for their efforts.

The experience of the individual, concerning the increased costs of maintenance of a property, is the case with municipalities, as a result of which the tax rates must be (and have been) increased, which adds another item to the expense account of the property, which must be allowed for in arriving at an equitable rent.

In the past two years the tax rate of Philadelphia has been increased 85 cents per $100.00 assessed valuation of properties—25 cents in 1917 and 60 cents in 1918—hence it can readily be seen how fortunate the druggist tenant has been who had a lease for a term of years at a designated rent.

The managers of the Insurance Companies have learned that the increase costs of doing business had not made any exceptions to their companies, as a result of which increased premiums are demanded for fire and other forms of insurance, which added expense falls upon the shoulders of the landlord—to keep company with the other increased expenses he is privileged to enjoy.

If you will carefully inspect your insurance policy, you may be surprised to find among the conditions under which you are granted protection against fire is the following: "This company shall not be liable for loss caused directly or indirectly by invasion, insurrection, riot, civil war or commotion, or military or usurped power, or by order of any civil authority."

You will readily observe that in times of war or insurrection the risk assumed by the owner of a property is materially increased; hence he must protect himself as far as possible by demanding an increased premium on the risk (as is customary in all forms of insurance, the premium being regulated by the risks assumed).

As the Federal authorities are levying rapidly increasing income taxes, wherewith to carry on the war for democracy and liberty, into which we have been forced by the insolent, arrogant, brutal, treaty-defying hordes of Middle Europe, this fact must not be overlooked when tabulating the just claims of the landlord.

We have now compiled a list of expenses (all of which have materially increased in recent years) that the landlord cannot escape, and which he must bear in mind when endeavoring to decide upon an equitable and just rent for his property. All of these must be deducted from his income received as rent before he can calculate the rate of interest earned by his money invested.

We now arrive at a point where considerable difference of opinion may arise, but, if we will approach the question with an open mind and in a spirit of fairness, I believe that no serious discord will result.

Inasmuch as the cost of living has materially increased, and investments in all sorts of commercial enterprises are netting greater income to the investors, is the landlord entitled to a greater return upon his investment than he previously enjoyed? Quite likely it will depend somewhat upon the question as to "which side of the fence you are on" in this case, as the renter certainly does not relish an increase in expenses in the form of rent.

To those who entertain the idea that an increase in rent at this time indicates profiteering, I will direct their attention to the fact that the investor must protect his principal involved by guaranteeing a net income that will prove as attractive in proportion to other forms of interest as the past incomes have proven to be; otherwise he stands a good chance of losing a portion of his capital, through the diminished market value of his property. This certainly necessitates a greater percentage of net income than in the past.

Our Federal authorities are compelled to offer higher rates of interest upon the best securities in the world, in order to attract investors, and as all forms of investment are based upon the standard set by the Bonds of the U. S., it is axiomatic that other forms of securities, including real estate, must show higher rates of income than in the past, in order to safeguard the market value of the investments.

If such action is not taken by the landlord he will unquestionably be forced to sustain a loss when he disposes of his property—by desire or through necessity—as the net income of real estate determines its market value.

Many instances could be cited where the market value of properties were materially reduced through the reductions in rent that were necessitated by various influences beyond the control of the owners thereof.

Mistaken ideas of the carrying charges of properties are obtained by the public through the misleading displays made by some builders in their efforts to show how great an amount of rent can be saved by purchasing one of their houses, thereby making the landlord class of investors appear to be hard-hearted, usurious persons. This practice should be controlled by legislation as many innocent parties come to grief when they experience the true costs of maintaining their properties.

As far as the druggist tenant is concerned, he has no capital invested in the property and assumes no risk except the amount agreed upon in the terms of the lease to be paid to the landlord, and if he is an untried quality, the landlord must take a risk upon his integrity, his business qualifications and his application to business; hence it is apparent that the element of chance is decidedly in favor of the tenant.

I am not unmindful of the fact that the landlord, as owner of a specific property, has the final decision as to the use to which it shall be put—except those businesses that depend upon a license from the courts, and those possibly restricted in the deed for the property—; but he has his hands tied when he signs a lease for a term of years, just as the tenant is obligated to pay the rent for a like period of time—if he remains solvent.

When basic conditions of any country become so radically disturbed as they have become in our land, it is logical to expect the relations between the landlord and tenant will be more or less altered from the old standard and the greater uncertainties that all of us must look forward to in all walks in life, including retail druggists, necessitates greater elasticity in the terms of leases written and signed in the future.

If a landlord demand increased rent for his property from a druggist, his tenant, he should be willing to present a display to the tenant, upon demand, showing the increased costs of maintenance of his property, and the tenant should be willing to concede a higher rate net income to the landlord, for reasons previously stated.

If a lease is demanded for a period of years, to protect his business, the druggist should be willing to assume the payment of all increases in taxes, and extra upkeep costs of all sorts and descriptions, thereby guaranteeing a measure of protection to the landlord that his income from his property will net him about a certain percent upon the money invested—or more justly upon its market value—which amount he could invest in some other forms of security of equal stability.

As the landlord presents security to the lessee in the form of tangible assets, it would not be unreasonable upon his part to demand security in some form for the faithful performance of the contract upon the part of his tenant, and I look for greater demands along this line in the future than has been the custom in the past, as the uncertainties that will exist in business circles after the termination of this frightful war with its unprecedented and unknown amount of expenses, will add materially to the hazards of engaging in business—and the drug business will be no exception to the general rule.

Under such a state of affairs the landlord will be compelled to assume greater risks of failure by his tenant; hence he must demand a larger income from his investments.

Having presented for your consideration a number of facts that directly apply to the question of the relationship of landlord to tenant, and reversely, I will leave it to your sense of justice to decide if the landlord who has raised the rent of his druggist tenant can be honestly accused of profiteering.

If the increase of rent has been a moderate one (whether accompanied by an explanation as to the cause for the additional amount of rent demanded or not), I should not feel justified in entertaining any such thoughts. If the extra amount demanded is as great as 50 percent or more, I should expect a satisfactory explanation from the landlord as to the necessity for such action upon his part, and if it were not forthcoming I should be forced to believe that his silence indicated his inability to prove himself innocent of profiteering.

It is to be understood that these conclusions have been based upon economic conditions as they exist at present, and any serious alteration of basic conditions would demand a new investigation and more calculations, with probably a different decision.

It is a serious matter to accuse one's fellowman of profiteering in these days of stress and trial, for it is a more or less arraignment of their patriotism and humanitarianism; hence let us not judge harshly or unjustly.

THE APOTHECARY, A LITERARY STUDY.*

BY EDWARD KREMERS.

10. THE TWO SONS OF A DANISH APOTHECARY.

Opposite the harbor of Kiel, the naval base of Germany, and between two larger Danish islands, there lies the long but narrow Langland. It is but 4 to 8 Km. wide and 50 Km. long, hence its name; its area is but 275 square Km. According to recent statistics, it has a population of only 19,541 inhabitants. The only city in the island is Rudkjoebing,[1] which at the same time boasted of 3,447 inhabitants, and a harbor which about 150 vessels regarded as their home port. Yet this insignificant place gave to Denmark one of her greatest statesmen of the nineteenth century, and to the world one of her famous scientists. What is more, these two men were brothers who first saw the light of day in the home of an apothecary. The love of truth as expressed in nature and nature's laws was instilled into their minds by their father, the love for all that is true and noble having previously been inplanted in their young hearts by their mother. Such at least is the story told by Hans Christian Andersen in his tale of the "Two Brothers."

HANS CHRISTIAN OERSTED.
(From Lithographic Institute om Em Baerentzen.)

Hans Christian, the older of the two brothers, was born August 14, 1777, in Rudkjoebing. At the age of eleven he was set to work by his father in the apothecary shop,[2] where "he developed a taste for the natural sciences." Apparently, to make up for the instructional deficiency in so small a place, he was sent away from home when eighteen years of age to receive instruction in the classics. For proficiency in these studies he received academic honors in 1796. In 1798 he received the medical prize of the University of Copenhagen, and in 1799 he was

* For the illustrations the writer is indebted to Apothecary Hoem, of Copenhagen, and to Apothecary Bauer, of Rudkjoebing. The cuts for illustrating this article were kindly loaned the JOURNAL OF THE A. PH. A. by the *Deutsch-Amerikanische Apotheker-Zeitung*.

awarded the doctor's degree in philosophy. Thus, while his father set him to work in his apothecary shop at an early age, this apprenticeship was not allowed to interfere with a liberal education in the classics and an equally broad introduction into the study of the natural sciences. One has but to look over the list of his publications[3] to see that he never allowed his specialty to dwarf him intellectually.

In 1800 he acted as manager of the Manthé apothecary shop in Copenhagen, and at the same time delivered his first lectures in chemistry before the Academy of Surgery. After this he made his first trip to the continent, where he remained several years visiting the greater part of Germany, also France and Holland. He returned to Denmark in 1804. Somewhat later he was appointed to the professorship in physics at the University of Copenhagen. In 1824 he founded the Danish Society for the Advancement of Science. In 1829 he was made Director of the Polytechnic School in Copenhagen. In 1840 and 1850 he received government recognition by being appointed conference councillor and privy conference councillor, respectively. He died March 9, 1851.

ANDERS SANDOE OERSTED.
(From Lithographic Institute om Em Baerentzen.)

His world fame, Oersted owes to his discovery, in 1820, of the deviation of the magnetic needle by the electric current, thereby establishing the laws of electromagnetism.[4] However, not a few of his earlier writings are of a chemical nature, and one of them in particular, *viz.*, his *Om et nyt Aesk i Peberen*, the discovery of piperine in pepper, only a few years after the German Apothecary Sertuener had discovered the alkaline properties of morphine, reflects his earlier pharmaceutical training.

The younger brother, Anders Sandoe, was born December 21, 1778, became a jurist and later statesman. In the latter capacity he advanced from one position to another until, in 1853, he was appointed prime minister by the King of Denmark. He died May 1, 1860.

However, to return to the apothecary shop, which is the scene of Andersen's story. According to the fifth edition of "*Den Farmacevtiske Stat i* Danmark, 1915,"[5] published by the Danish Pharmaceutical Society in 1917, the "Rudkjoebing Apotek" was established Nov. 2, 1705, by Christopher Gottfried Becker. In 1741 it passed into the hands of Anders Joergensen and in 1773 into those of H. Vennenghausen. On June 5, 1776, hence only a month before the declaration of independence of the American colonies from England, it was purchased by Soeren Christian Oersted for 600 Rbdl.[6] Inasmuch as neither of his sons followed in the footsteps of their father, the apothecary shop did not remain in the family, but passed into the hands of one Anthon Jacobaeus, March 10, 1806. After that it changed hands several times and since 1889 its proprietor is Christian August Pilegaard Bauer.

Statue, Hans Oersted, in Oersted Park, Copenhagen, unveiled September 25, 1876.

But now, as to Hans Christian Andersen's story of the two brothers. It will be seen that the Christian names of the Danish story teller are those of the elder of the two brothers, the world-famous scientist who emanated from the modest apothecary shop in Rudkjoebing. The German translation is one of the

seventeen selected by O. B. Super in his *Adersen's Maerchen* of the Heath Modern Language Series. However, the exceedingly meagre comments in the "Notes" contain nothing whatever pertaining to pharmacy. The English translation here reproduced is taken from the 1870 edition of "Stories and Tales" by Hans Christian Andersen, of Houghton, Mifflin Company, who kindly gave permission to use their text for this purpose.

"On one of the Danish islands, where ancient judgment seats loom up mid the cornfields, and mighty trees lift their heads in the beech forests, lies a little town, with red roofs over the low houses. In one of these curious matters were being prepared over the coals and embers on the hearth: there was testing in crucibles; there was triturating and distilling; there was pounding of drugs in mortars; an old man stood over the whole.

" 'One must rightly combine the right matters,' said he 'yea, the right, the fitness, the truth in each created thing, we are to recognize and hold.'

ŒRSTED'S APOTHECARY SHOP.
The following words are on the plate under the clock: "*Tiden-er-kort Brug-den-vel:*" Time is short—utilize it well.

"In the chamber, by the good good-woman of the house, sat two sons of hers—yet young, but with grown thoughts. Of right and reason had the mother ever counseled them, and to hold fast to truth, which is the face of God made visible on earth.

"The elder of the boys seemed arch and pert; his delight was, to read of nature's

laws, of suns and stars—no tale could give him better joy. O, what bliss, to go on journeys of discovery, or to contrive to imitate birds' wings, and fly!—yea, that were the true thing to find! Father was right, and so was mother; 'tis truth doth hold the world in shape.

"The younger brother was of a quieter mind, and lived but in his books; did he read of Jacob—how he clad himself in sheepskins to resemble Esau and therewith to wrong him of his right of birth—in anger the boy clinched his little hand, vexed at the fraud; did he read of tyrants, and the wrong and misrule that reign in the earth—tears filled his eyes. Thought of the right and of truth, that ought and were to triumph, swayed him mightily. One night the little one had gone to bed; but the curtains hung awry, and let in some light upon him, by which he lay with book in hand, and read to end the history of Solon.

"And thought did lift and bear him strangely on, 'twas as if the couch had grown into a vessel under sail—was he dreaming? or what meant it else? He glided over rolling billows—coursing swift athwart the sea of ages; his ear caught Solon's voice, proclaiming, in the stranger's tongue—and yet the boy did understand—the Danish motto: 'Justice buildeth up a land.'

"And the Genius of Humanity stood in the midst of the lowly chamber, bowed over the boy, and left a kiss upon his brow: 'Be strong in glory, and strong in the battle's heat; with truth fixed in thy breast, go forth on thy way unto the home of truth!'

"The elder brother was not yet abed; he stood at the window, gazing out upon the mists that arose from the plain; they were not elves, a-dancing over yonder; the old nurse, 'tis true, had taught him so; but he knew better; they were vapors, warmer than the air, and hence they arose. A shooting-star lit up the sky, and the boy's thoughts were instantly gathered up from the mists of earth, into the region of the shining meteor. The stars twinkled in the firmament, and it was as if golden threads were floating from them to the earth.

" 'Come with me!' it sang and rang in the boy's heart, and the Race's mighty Genius bore him—swifter far than bird or arrow, or aught of earth that flies—out into Space, where ray on ray from star to star bound all the rolling globes to one another; the earth was spinning in the rare empyrean city crowding close on city. Through the spheres resounded—

" 'What is space, and where is distance, while the lofty spirits of Thought bears thee on high?'

"And again the youth was at the window, peering forth, and the younger brother lay abed, and their mother called them by their names:

"Andrew and Hans Christian!"

Denmark knoweth them, the world knows both the brothers.—"Oersted."

BIBLIOGRAPHY.

(1) Kjoebing, is a place where merchants (Ger. *Kaufmann*) assemble, hence a market.

(2) A copy of Forchhammer's biography of Oersted (G. Forchhammer, *Hans Christian Oersted*, Kjoebenhavn, 1852) is in possession of Yale University Library, which kindly loaned its copy to the University of Wisconsin Library for use at Madison.

(3) Such a list of Oersted's publications may be found in Forchhammer's biography already referred to.

(4) As Oersted states in a Latin brochure, a German translation of which appeared in *Gilbert's Annalen*, vol. 66 (1820), p. 295, this observation was first made in connection with one of his lecture experiments, and later repeated in the presence of personal friends. Inasmuch as he regarded the observation of fundamental importance, he mentions the names of those who saw the experiment as witnesses. The importance of the observation and the consequences derived therefrom, are dwelt upon by Rosenberger in his *Geschichte der Physik*, 3rd part, p. 173.

(5) For copy of this work, the University Library is indebted to the generosity of Mr. Otto J. S. Boberg, of Eau Claire, Wisconsin, who received his pharmaceutical education in Danish apothecary shops and at the University of Copenhagen.

(6) Rbdl. = *Rigsbankdaler, i. e.*, the dollar of the imperial bank, the equivalent of one-half dollar, U. S. coin.

DRUG STORE RECOLLECTIONS.*

BY J. N. HURTY, M.D.

Col. Eli Lilly beguiled me into the drug business. I was a callow youth of 16 years and 9 months, and was to graduate in high school the spring of 1870. It was April—Col. Lilly lived in a humble frame dwelling opposite the school house. He was raking his yard that bright spring morning, and I, a callow, conceited and centered youth, with strap-bound books, was trudging unwillingly to school. "Hey, John," said the Colonel, and I stopped. "Come in here, won't you, I want to speak to you." I went in and he unfolded his story which shaped my life work. Up to that time it had never entered my mind to become a druggist. The Colonel made a "center shot." All that day and the next, and the next, and for two weary weeks until school ended, I thought, I dreamed, I contemplated upon becoming a druggist. My expectations were keen, my enthusiasm was at a white heat. I walked by the Red Front Drug Store (that was the name of the Colonel's emporium of drugs and simples) at least twenty times a day. My salary was to be three dollars a week and what could I not do with such a princely income? Priorly I had earned one fifty per week selling and carrying papers, and here was a jump of one hundred percent. It isn't every boy—I said to myself who early in his life's career has his salary doubled. The morning of the first day I awoke at four and it seemed an interminable time until 6.30 A.M., when I was to meet the Colonel at the big double doors of the Red Front. I was there twenty minutes before time, having eaten scarcely any breakfast.

The Colonel appeared a little behind time, which surprised me greatly. He inserted his big iron key, which I remember was about eight inches long and weighed at least three ounces. The door opened and supposedly my life work was before me.

"Sprinkle the floor and sweep out," were the orders, and willingly I went at it. I had for a year sprinkled and swept the floor of the news stand by the post-office and so the work was done acceptably. The show cases, the counters and the base board of the shelves were then dusted with a feather duster and the store was ready for business. "Fix the lamps," was the next commmand. Eight coal oil lamps suspended from three two-armed fancy iron chandeliers lighted the room. I started to take down the lamps two at a time to show my efficiency.

* Read before Historical Section, A. Ph. A., Indianapolis meeting, 1917.

But, alas, I fell off the shaky step-ladder, broke both of the vitreous dispensers of light, skinned my shins and made an awful muss of broken glass, wicks and coal oil upon the recently swept floor. Of course, the Colonel was startled and he exclaimed—"My God, what a stupid ass you are." But seeing my plight and the sorry look in my face, he relented and broke into a paroxism of laughter. My life was saved. Now that he had laughed I knew that my execution was not near.

In about two weeks I had another accident which I might just as well tell right here. The cellar was entered by a flat door in the floor lifted by a ring. Just above this door on a wide shelf was a row of one-gallon glass-stoppered bottles which held stock such as paregoric, laudanum and Huxhams Tincture. One of the bottles contained a gallon of freshly made bay rum, which the Colonel had given a slight yellow color with tumeric. It was this bottle which came very nearly undoing me, and it happened in this way: I was ordered to the cellar, to bring up a bundle of handles for white-wash brushes. They were about two feet longer than ordinary broomsticks. I was told to be careful, and I resolved to be, but alas and alack, man proposes and God disposes. On the stairs I slipped and the end of the bundle fell with heavy impact upon the bay rum bottle and shattered it into a million pieces. The bay rum poured forth upon my head and down my neck, saturating me with its fragrance. It was a veritable deluge of bay rum. The Colonel did frown "sure nuff" this time. His face plainly said, "this brat is impossible." I had nothing to say and could only look at the Colonel, and he looked at me. There I stood, dripping with fluid and the fragrance of bay rum filled the room. A customer appeared and viewed the wreck, and again the ridiculousness of the situation became ascendant, and we all broke forth in laughter. My laughter was somewhat forced. But I was saved.

Concerning bay rum. Its drug store days are not what they were. The barbers were our best customers, and in these degenerate days the barber-supply houses are the sources for this delectable cosmetic and also for lavendar water, pomade and cologne.

CONDITION POWDERS.

Condition powders sold splendidly fifty years ago. We made our own and the "Red Front Lilly Condition Powders" had a reputation which was not bounded by county lines. I have made barrels and barrels of these condition powders and packed thousands of cartons. We bought copperas, alum, rosin, epsom salt, sulphur and bicarbonate of soda in five-barrel lots. Foennugreek was, of course, an ingredient of our superlative mixture. The copperas, alum and rosin had to be powdered and, the cub powdered them. And now, say—did you ever powder a barrel of dried copperas, a barrel of dried alum, and a barrel of rosin in a fifty-pound iron mortar and sift these through a fine sieve? It certainly is some job. The iron pestle had a hickory extension handle attached to a heavy cord which passed through a pulley overhead and was counterbalanced with a small sack partly filled with stones. Oh! the dust! It filled my hair, my eyes my nose, my mouth. It even seemed to penetrate my mind and soul. For weeks after I had made a five-barrel batch of our unexcelled, unequaled and superlative condition powders, I actually oozed sulphur, copperas and foennugreek from every pore. For hogs the powders were modified by adding one-half pound of powdered arsenic to each fifty pounds. As for testimonials, we had them by the

thousands. Every user of our powders insisted there was nothing like them either in the heavens above, the earth beneath, or the waters under the earth, and not one of the ginks was in the least degree competent to testify. Yet their testimonials were a go. All I can now say for them is—as far as I know, none of the poor beasts who were made to eat the powders in their food died because of the foolish medicine.

BAKING POWDER.

Baking powder was another great seller at the Red Front Drug Store. Making it was a clean but dusty job. When a batch was finished and safely placed in its paper-lined barrel, I was white as a miller, and again mouth, nose, ears, eyes and hair were fully, completely and absolutely filled and saturated. Indeed, after mixing a barrel of Lilly's par-excellence baking powder, my soul, mind and body were not made lighter, but heavier.

DOVERS POWDER.

Has any one here under fifty ever made Dovers Powder? I doubt it. Did you ever know its ingredients? Well, I have made it, and I made it too by Colonel Lilly's method. First, the potassium sulphate and the powdered opium were stirred in a mortar for one-half hour, scraping down with a broad limber spatula. Then the powdered ipecac was added a little at a time with grinding and scraping ad infinitum. Finally, the compound was placed on a large sheet of paper and again mixed and mixed with a spatula. All of this mixing and rubbing was not entirely to effect the thorough admixture of ingredients, but also, "by human contact and motion to impart certain obscure qualities not otherwise to be secured."

PATENT MEDICINES.

Patent medicines simply were on the rampage in my early drug store days. And yet—to-day, we find school teachers and preachers who have not risen out of the patent medicine stage of ignorance. Fifty years ago Helmbold, Jayne and other patent medicine kings wallowed in wealth. They simply dripped with gold. I remember reading an account of Helmbold's great glorious golden glory at Long Branch. Solomon, Croesus, nor any of the ancient gold bugs could touch him. He had 'em all beat a hundred miles. And to think Helmbold's great fortune was produced from nothing. Absolutely nothing. No, I am wrong, it was based upon the stupidity, ignorance, superstition and irrational credulity of mankind. And all these we shall never lack.

The funniest patent medicine stunt that was ever pulled off was "Walker's California Vinegar Bitters." Our little country drug store purchased these bitters in fifty-case lots. Thousand sung their praise. The testimonials, positively asserting the life-giving and curative powers of Vinegar Bitters, came from farmers, robbers, doctors, merchants, chiefs, and not one grain of the entire testimony was worth a darn. Walker's California Vinegar Bitters was, we were told, simply aloes soaked in weak vinegar and literally wrecked the intestines into which they were introduced. Then there were bitters and bitters and other bitters.

Joseph R. Perry, the genial one-time editor of the *Indiana Pharmacist*, tried a bitters trick which won and which brilliantly reflected the credulity of people. He had in his stock odd bottles of several kinds of bitters with wrappers spoiled

and worn and unsalable. He bulked the bitters in a keg, added some whiskey, and rebottled with a flaring red label, announcing— "*The Most Wonderful and Powerful Stenofacient Bitters.*" *A New and Great Discovery. Life Giving, Life Saving, Strength Making.* Upon the label were two pictures, one of a miserable individual and the other of a strong, ruddy person, showing before and after taking.

The wonderful medicine sold readily. The first supply was soon gone and the demand had only begun. Then Joe bethought himself and pondered as to whether or not the joke should be continued. Joe was honest, and, of course, therefore impractical. He just couldn't keep up the swindle and he didn't, and frankly told his customers and they voted him a fool and unworthy of patronage. But what are you to expect of a world in which millions of people will defend divine right to rule and allow themselves to be plunged into a whirlpool of human blood simply to exalt a paranoic with a withered arm, a running ear, and a cancerous throat.

ASAFETIDA.

Did you ever see a one-hundred pound box of asafetida in a little country drug store? What do you suppose could be done with it? Well, the Lilly Red Front Drug Store, actually bought the malodorous drug in one hundred pound lots, and we powdered much of the vile stuff in a big iron mortar.

In those days every child was a stinker because of a little bag of asafetida suspended over its chest. It was a rank stupidity, crass ignorance and silly, but it was done by Christian people. Several times in my early drug store experience I grew faint-hearted and seriously thought of engaging in some life work that had fewer irritating, disgusting, tiring and repugnant features. Especially strong was this thought when I was called upon to powder dried asafetida in an iron mortar. That job was the limit. But evidently I was weak; anyhow, not strong enough to quit a business which dealt in asafetida.

PLASTERS—PILLS—LOZENGES.

I wonder if there are any pharmacy kids here present who ever spread split-skin plasters, made compound cathartic pills by the quart and cut ten-pound lots of tamarind, fig and senna lozenges, or made pecks of cough troches? As I remember my sensations I felt like jumping and shouting when I had finished a batch of compound cathartic pills which filled a drawer holding at least a peck. My first batch of tamarind, fig and senna lozenges brought upon me a mighty catharsis for despite warning I persistently nipped off pieces of the mass to satisfy the gustatory pleasure hidden therein.

I watched Colonel Lilly spread a plaster with a curiosity which developed into great admiration. First, the white split skin was carefully squared, then tacked to a pine board and strips of calendered paper pasted around the edges. How is this to come out?—I almost thought aloud. Then the Colonel carefully spread the melted plaster mass with a spatula, finishing the surface to perfect smoothness. Then came the dusting with tartar emetic, and lastly the paper strips (the paste not yet dry) were skinned away and there was the finished plaster, an example of the master's skill and art. I was a proud pharmaceutic kid when I finally could turn off a pitch plaster which would pass inspection. The plaster

was dispensed in a big envelope made by ourselves out of stiff manila paper. I am quite sure large paper envelopes were not purchasable on the market in those days.

SODA WATER.

Yes, we had a Tuffts Fountain, and after I had learned how to make syrups and charge fountains I voted it a nuisance. On circus days and at county fair time, people stood in line to drink our soda water, which had the reputation of being the best in town. The washing of the glasses and the slop made at the fountain led to a washing scheme which was conceived by the Colonel and which was not a success. Two hundred glasses, the thick kind, were purchased, the idea being to wash the glasses at a special sink in the rear of the store and bring them forward in trays clean and shining. The plan worked well in a rush with about three boys to keep the glass supply from failing and provided they kept out of the way of the dispenser. But if business lulled the glass washers had little to do and became "stand arounds" on expense. Only on big days did we work this plan, and on account of its complications the confusion of running to and from behind the counters, it was abandoned.

In 1873 I attended the Philadelphia College of Pharmacy, and when I returned the Colonel one day remarked—"Well, I suppose you know it all now?" The question was kindly put, for the Colonel's great heart would not brook unkindness. "No," I said, "I don't know it all, but I know more than I would have known under your teaching." "Good, Good," he shouted. "You'll come through." But it was Mike O'Hare who said the right thing. "Where have you been so long, Johny?" asked "old Mike." "Been away to pharmacy college," I replied. "That's right," said he, "make a farmer of yourself."

THE STATE LEGISLATURE.*

BY W. H. COUSINS.

Caesar had his Brutus, Job his boils and Caranza his Pancho Villa, yet none of these much-touted martyrs ever hovered 'round the corridors of a State House and sought to get the attention of the Honorable Jason Jawsmith, chairman of the Committee on Public Health. The trivial demands of the craft of Pharmacy are nothing compared with the howling needs of the populace. Nine-foot bed sheets, the lengthening of women's dresses at both ends and the tax on cigarettes are the average State solon's idea of saving the country and keeping it from going to the dogs the shortest route.

The State Legislature is the most brutal joke of the age, made up, as it is, mainly of an aggregation of unconscious comedians, who, in their serious contemplation of themselves, put Don Quixote to shame. When Heck Rogers of the Cactus and Greasewood "Deestrict" strokes his whiskers, he imagines the seismograph is having a convulsion in Greenwich Observatory, and when approached

* Read before Joint Meeting: Section on Education and Legislation and Pharmaceutical Legislation, A. Ph. A., American Conference of Pharmaceutical Faculties and National Association of Boards of Pharmacy, Indianapolis meeting, 1917.

on the subject of Pharmacy puts on a pouter-pigeon aspect, leaving the impression on the poor human caterpillar who dared approach him that he can not be bothered with small things. I have been handed everything from a lemon to a block of ice big enough to cool Lake Michigan while trying to get an opportunity to tell the powers that were, that I believed the man who practiced Pharmacy in a wagon should be under the same requirements as the man who practiced Pharmacy in a drug store. It seems that the pharmacist of this country is a kind of legislative step-child, who asks for bread and is given a stone. He pleads for a fish and gets a snake. I call to mind at this time the hard work of a legislative committee in a southern State last year. This committee sought to regulate the itinerant vender of medicines, they made a long, hard fight, they gave up much time and money in the effort, and after it was all over and the smoke of battle had cleared away, instead of placing the vender under the same restrictions that pharmacists are under, the Legislature reduced his tax 50 percent.

A State Legislature is a collection of human curios and would furnish many tips for comic opera if the composers of this mental diet for the tired business man but knew it. We believe that the legislators will eventually fix it so that the pharmacists will have to employ legal counsel by the year in order to avoid breaking some of the idiotic, Welsh rarebit dreams that they have written into the statute book. They seem to view us in much the same light as a rustler is looked upon in the cattle country. We get more attention in the form of prohibitive laws than the burglar and the confidence man; when revenue is needed they add a few links to the endless chain that now reaches nearly to the bottom of the druggist's boots. However, in the State Legislature we are getting what we pay for. You can buy whiskers, bald heads and huge equators for little money, but when you go into the market to buy brains, you will have to come loose from some coin. The average State legislator's remuneration is not as much as is paid a union bricklayer, and a plumber wouldn't sleep on the job for what is paid a solon who assumes half the responsibility for the behavior of Atlas.

A State Legislature has more views regarding the best way to save the country than a frightened cayote has notions. Colonel Songbottle, of the Rocky Creek District, is threatened with passing a bill to rescue working girls from work, and is ready to pour out eloquence, enthusiasm, blood and various and sundry flagons of "40-rod" in order that this admirable draft may become a law on our statute books. Another comes to the forum with a heart full of sympathy for the comfort and well-being of Jersey cows, and is ready to wade in blood to his eyebrows in order to put his antitick measure under the Governor's nose for his signature. There is the chap with a deep-seated hunch that every community should have its mosquito inspector and a 'steen million dollar appropriation for research work in the investigation of the diseases of humming birds. At about this juncture, Percy Pinchback screws the single barrel spectacle a little deeper into his starboard lamp and moves immediate consideration of the bone-dry bill. Percy having just regaled himself with a cup of warm tea and an order of lady fingers, feels fit as a fiddle and hard as nails, and is panting for a roughhouse with the wet element. Percy bears a strong facial resemblance to a hatchet and his idea of being real downright mean and doing something bloody blooming rough,

"donchar knaw" is to eat breakfast food for dinner. Nevertheless, in this instance he has started something that it will take fourteen weeks to stop.

Any time the bone-dry bill is mentioned, above a cathedral whisper, legitimate interests are relegated to the twilight sleep, while the wets leak tepid atmosphere, anent personal liberty, and the drys sing "Where Is My Wandering Boy Tonight." All this has such a salubrious effect on the chairman of your legislative committee. One day he stands with his foot on the brass rail and his pulley-bone on the mahogany until he is pie-eyed, and has his system fastened to a real raz-mataz Jack London jag that screams for aspirin and hollers for spirit of ammonia, appealing to the wets to support the Pharmacy Bill. They fall on his neck and say in loud, vociferous voices, "Thas all right, bo, are we with you? I should shay sho." The next day he makes a drag to get the drys to support the Pharmacy Bill. He has to drink water, discourse learnedly on the effect of alcohol on posterity, discuss elaborately and at great length the final perseverance of the saints and he delivers an oral thesis on the church *versus* the stage. The brethren are unanimously in favor of supporting the Pharmacy Bill. The chairman is much pleased, in fact he is tickled almost into convulsions, especially if he be a new man at the game. He wends his way slowly to his hotel, where he locks the door, hangs his pajamas over the transom, pulls down the blinds, disconnects the telephone in order to light a cigarette without getting caught in the act as he meditates, peering through the curls of tobacco smoke, he seems himself, down by the sea, like Alexander the Great, filling a large bandana full of briny tears because unconquered worlds are not to be had any more. He readily discerns why the fool killer passes up State capitols. It's because he doesn't want to wilfully neglect the rest of the world, and of the two jobs he chooses the lesser. Our chairman even laughs out through the armholes of his vest when he thinks of how he has put something over the State Legislature that has been hanging fire for all of these years, he views himself as a smooth manipulator of men, delivering wets and drys, tied in bundles and laid in rows. He doesn't know that a kiss of good-bye and a "God bless you" doesn't mean that the Pharmacy Bill is passed any more than it means that asafetida has lost its odor. Our hero is not allowed to gloat long over his brilliant achievement. He is called to the committee room on a bright, sunny morning, to witness the demise of the Pharmacy Bill. It is chloroformed for legislative operation, and dies on the table. As he journeys homeward he feels just like the chairman felt last session, the session before, and all other sessions at which a Pharmacy Bill was sponsored.

Infant mortality among the Pharmacy Bills in my extensive legislative practice has been nearly 100 percent. Like a Roman mother, I have stood first at the cradle and last at the grave. I have seen them born, full of hope and health. I have seen them wither and die, with a dull thud, like a campaign pledge hitting the tidal wave of prosperity, while a weak, sickly measure for the protection of stingless mosquitos grew and thrived under the blessed sunlight of committee room sanction. Semi-annually, for many years, I have stood by and wept silently as one of these legislative babies christened "Pharmacy Bill" passed to the scrap heap of broken hopes. Bill always looks the part; he has the makings of a statute, but his young life is of but a few days and full of trouble, he is strangled to death of hot air in that fatal nursery, the committee room. Your chairman may be

able to unbutton the time lock at any hour in the 24, he may know how to jimmy the latest model vault and scale the tallest porch on the boulevard, but if he ever breaks into the committee room and gets the Pharmacy Bill out, he will have established a precedent and should be pensioned for life.

There's another feature of the legislative chairman's dealings with the State Legislature that is just as pleasant to him as a bone felon on his trigger finger, and that is to have a druggist howl himself hoarse because the legislative committee didn't accomplish anything. This druggist went right on making suppositories in a very tranquil and unconcerned way while the legislative committee was sitting up nights, sweating blood and begging him to help. He shows his gratitude like a foot-pad who beats his victim unmercifully because he didn't have more money. Probably so many sins would not be laid at the door of the State Legislature if the pharmacists of this country would help the legislative committee. Owing to the presence of ladies, I am unable to express fully my views of certain State Legislatures.

CHEMICAL WARFARE SERVICE TO CONTROL GAS OPERATIONS.

The following statement is authorized by the Secretary of War:

The organization of the Chemical Warfare Service has been completed. Henceforth all phases of gas warfare will be under the control of the Chemical Warfare Service commanded by Maj. Gen. William L. Sibert.

Heretofore chemical warfare has been carried on by divisions in the Medical Department, the Ordnance Department and the Bureau of Mines. All officers and men who have been connected with offensive or defensive gas warfare here will be responsible to the Chemical Warfare Service. The field training section at present is under the Corps of Engineers.

DEFENSIVE WARFARE.

Defensive warfare has been under the control of the Medical Department. This work has consisted of the designing and manufacture of masks both for men and animals and the procurement of appliances for clearing trenches and dugouts of gas.

Offensive gas warfare consists principally of manufacturing gases and filling gas shells. The work has been under the direction of the Ordnance Department.

The new department will take over the work of chemical research for new gases and protection against known gases which has been carried on by the Bureau of Mines. All testing and experiment stations will be under the direction of the Chemical Warfare Service.

The responsibility of providing chemists for all branches of the Government and assisting in the procurement of chemists for industries essential to the success of the war and Government has been intrusted to the Chemical Warfare Service.

All chemists now in the Army will be removed from their units and placed under the authority of the Chemical Warfare Service. Newly drafted chemists will be assigned to the Chemical Warfare Service.

Authority to assign enlisted or commissioned chemists to establishments manufacturing for the Government has been granted to the new section.

A. PH. A. MEMBERSHIP PRIZES FOR MISSOURI PHARMACISTS.

Henry D. Llewellyn, of Mexico, gave two prizes of A. Ph. A. member hip during his administration as president of the Missouri Pharmaceutical Association. He now offers an additional two for the year 1918–19. These prizes are open to all members of the Mo. Ph. A. In order to obtain one, it is necessary to get in on the honor list with a large number of new members for that association. Each Llewellyn prize pays one year's dues in the American Pharmaceutical Association. If the winner is not a member, he will be recommended for election. If he already belongs to the A. Ph. A., his dues will be paid by Mr. Llewellyn for one year.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

NEW YORK.

The May 1918 meeting of the New York Branch of the American Pharmaceutical Association was called to order by Acting President Turner in the Lecture Hall of the New York College of Pharmacy Building, on Monday evening, the 13th, at 8.15 o'clock. Sixty-two members were present.

The Treasurer's report was received and ordered filed.

Member of the Council: Professor Hostman brought in a brief report which was ordered accepted with the thanks of the Association.

Membership Committee: The following applications were received and the Secretary was directed to take the usual course with regard to these new members:

Morris Adoff, 546 Claremont P'kway, Bronx, N. Y.; John Paolantonio, 210 Gilbert St., Utica, N. Y.; Eugene T. O'Kane, 299 Gilbert St., Utica, N. Y.; Julius M. Pakchar, 367 S. 2nd St., Brooklyn, N. Y.; Samuel M. Goodman, 131 Spruce St., Newark, N. J.; Conrad E. Langfield, Northville, Mich.; Flower H. Reige, Tompkinsville, N. Y.; Henry C. F. Arnold, Quogue, N. Y.; Charles Shavel, 204 Columbia St., Brooklyn, N. Y.; Gerald A. Richardson, 152 Virginia Ave., Jersey City, N. J. The following from New York City: Benjamin Billig, 4003 Third Ave.; Max Bergman, 1570 Bathgate Ave.; Isaac Berniker, 1735 Washington Ave.; James Cicalello, 301 East 150th St.; George Casper Deffa, 168 E. 66th St.; Simon Doniger, 79 Sherman Ave.; Irving A. Edelstein, 1728 Crotona Park East; Bernard Eol's, 2403 Watton Ave.; Isadore Flomenbaum, 1129 Vyse Ave.; Henry Frank, 2071 Vyse Ave.; Louis Friedman, 668 Teuton Ave.; Joseph Greenberg, 1047 Teller Ave.; Max M. Hager, 1484 Hoe Ave.; Miss Grace I. Harper, 10 West 101st St.; Max Heinovitch, 1078 Stebbins Ave.; Julius Kerr, 500 West 172nd St.; Joseph R. Kerr, 500 West 172nd St.; Nathan Kerr, 850 East 150th St.; Alexander Kornfield, 1065 Morris Ave.; Bruno K. Kuhe, 821 Cauldwell Ave.; ohn D. Lore, 333 Second Ave.; David R. Mantoll, 71 East 121st St.; David Israel, 1037 Teller Ave.; Max Matlin, 2257 Second Ave.; Bernard Miller, 178 Brook Ave.; Jacob B. Moonves, 1426 Stebbins Ave.; Eugene Nagin, 299 Willis Ave.; George W. Pegg, 113 West 18th St.; Lawrence E. Pedroni, 1636 Melville St.; Oreste Petretti, 557 Fordham Road; Harvey Rabinowitz, 364 East 4th St.; Naftul Herz RaiCoy, 1525 Washington Ave.; Joseph Samsonoff, 1489 Vyse Ave.; Joseph Shapiro, 160 West 119th St., c/o Licker; Charles Silkes, 85 Attorney St.; Abraham Solomin, 14 West 115th St.; Samuel Stein, 855 Home St.; Sidney Weinstock, 879 Freeman Street; Mendèl Zagat, 850 East 156th St.; Anthony Armentano, 521 East 109th St.

Chairman Schaefer, of the Honor Roll Committee, reported that the suggestion was before the Council and would be acted upon.

Progress of Pharmacy: Dr Diekman read abstracts on the following subjects: Sodium Fluoride, Tests for Castor Oil, Tannin in Pacific Coast Trees, Tetra Chlorethylene, Tests for Wooden Fibres, Substitution for Platinum.

After some discussion the report was ordered accepted with the thanks of the Association.

Committee on Education and Legislation: Mr. Lehman brought in a rather lengthy report, which, after some discussion, was ordered filed.

New Business: Mr. Mayo suggested that efforts be made to hold the next Convention of the A. Ph. A. in New York. The following resolution was unanimously carried:

Resolved, That the New York Branch of the American Pharmaceutical Association instruct its delegates to the Convention to invite the Parent Organization to New York for its 1919 annual meeting.

Dr. A. R. L. Dohme now took the floor and explained the details of his plan of federation of pharmaceutical bodies. Doctor Dohme was then followed by Prof. C. H. LaWall, who explained his views of the plan.

Prof. H. V. Arny, Dr. H. C. Lovis, Dr. Jacob Diner, Prof. Jeannot Hostmann and Earl A. Means also took part in the program or discussed the plan.

HUGO H. SCHAEFER, *Secretary.*

COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 17.

PHILADELPHIA, PA., July 1, 1918.

To the Members of the Council:

Motion No. 26 (*Election of Members; application Nos. 145 to 204, inclusive*) has received a majority of affirmative votes.

Motion No. 27 (*Investment in Liberty Bonds for A. Ph. A. Research Fund*). Moved by J. A. Koch, seconded by H. M. Whelpley, that the Treasurer be directed to invest in Liberty Bonds, two thousand dollars or more, in addition to the ten thousand dollars already invested in such bonds, for account of the American Pharmaceutical Association Research Fund.

Motion No. 28 (*Election of Members*). You are requested to vote on the following applications for membership:

No. 205. Albert E. Baier, 322 So. Liberty Ave., Alliance, Ohio, rec. by F. J. Blumenschein and J. A. Koch.

No. 206. Charles S. Johnson, care Tampa Drug Co., Tampa, Fla., rec. by M. K. Taylor and Wm. B. Day.

No. 207. V. W. Estes, Orlando, Fla., rec. by W. G. Perry and M. M. Taylor.

No. 208. W. M. Hankins, Daytona, Fla., rec. by W. G. Perry and M. M. Taylor.

No. 209. N. H. Hunter, Fort Myers, Fla., rec. by W. G. Perry and M. M. Taylor.

No. 210. Roy N. Chelf, Brooksville, Fla., rec. by D. W. Ramsaur and M. M. Taylor.

No. 211. William Andrew Rawls, 25 S. Palafor, Pensacola, Fla., rec. by D. W. Ramsaur and M. M. Taylor.

No. 212. Samuel S. Filer, care Fogarty & Co., Key West, Fla., rec. by Chas. Johnson and M. M. Taylor.

No. 213. Harold Berlin Snyder, 20 Goepp St., Bethlehem, Pa. (Winner of Pharmacy Review Prize for Best Term Work in Pharmacy, Philadelphia College of Pharmacy), rec. by Ivor Griffith and Charles H. LaWall.

No. 214. Henry C. F. Arnold, 173 E. 85th St., New York City, N. Y. (Winner of the J. Leon Lascoff Prize), rec. by J. Leon Lascoff and Geo. C. Diekman.

No. 215. Anthony Armentano, 321 E. 109th St., New York, N. Y. (Winner of the J. Leon Lascoff Prize), rec. by J. Leon Lascoff and Geo. C. Diekman.

No. 216. Gerald Arthur Richardson, 152 Virginia Ave., Jersey City, N. J., rec. by H. V. Arny and Jeannot Hostmann.

No. 217. Alvin George Florian, 2401 Cass Ave., St. Louis, Mo. (Winner of Prize awarded by the St. Louis College of Pharmacy for Excellent Scholarship), rec. by H. M. Whelpley and J. W. England.

No. 218. Edgar Reynolds Thome, 2546 Reading Road, Cincinnati, O., rec. by H. M. Whelpley and J. C. Falk.

No. 219. John J. Grasser, 1234 St. Andrew St., New Orleans, La., rec. by Robert F. Grace and Oscar Hurley.

No. 220. Adley Bonisteal Nichols, 145 N. 10th St., Phila., Pa., rec. by Charles H. LaWall and J. W. Sturmer.

No. 221. Newman Grady Hubbard, Lineville, Ala., rec. by Cicero Rudd and Wm. B. Day.

No. 222. William John Trevaskis, P. O. Box 55, W. Memphis, Arkansas, rec. by Frank Schachleiter and Wm. B. Day.

No. 223. Miss Helen Stauffer, Locust St., Valparaiso, Ind., rec. by Mrs. Geo. D. Timmons and Anna G. Bagley.

No. 224. Adrian Andrew Arnaud, 417 Cherokee St., New Orleans, La., rec. by Robert F. Grace and O. B. Elmer.

No. 225. Ruth Caroline Menger, 1500 N. 29th St., Phila., Pa., rec. by Ivor Griffith and Robert P. Fischelis.

No. 226. Frank Hawkins, Blair, Okla. (Winner of John W. Barbour Prize in Pharmacy), rec. by H. S. Browne and Wm. B. Day.

No. 227. Velvie Bridal, Marshall, Okla. (Winner of Howard Storm Browne Prize in Materia Medica), rec. by H. S. Browne and Wm. B. Day.

No. 228. Max A. Zielinski, Cleveland, Ohio. (Winner of Prize for Best Student in Pharmacy, Cleveland School Pharmacy), rec. by Louis C. Hopp and Wm. B. Day.

No. 229. George W. Wood, 6642 Michigan Ave., Chicago, Ill. (Winner of Gray Prize Membership, Univ. of Illinois, School of Pharmacy), rec. by Wm. Gray and Wm. B. Day.

No. 230. Mrs. Neff K. Bakkers, 10900 S. Michigan Ave., Chicago, Ill. (Winner of Prize Membership, Univ. of Illinois, School of Pharmacy), rec. by Wm. B. Day and E. N. Gathercoal.

No. 231. Milton Stein, 2223 N. Front St., Phila., Pa., rec. by C. H. LaWall and Ivor Griffith.

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J. W. ENGLAND,
Secretary.

415 N. 33RD STREET.

A. PH. A. COUNCIL LETTER NO. 18.

PHILADELPHIA, July 1, 1918.

To the Members of the Council:

Word has been received of the demise yesterday of William Lawrence Dewoody of Pine Bluff, Arkansas, Honorary President of the American Pharmaceutical Association. He was born in Athens, Ala., on December 30, 1848.

A sketch of his life is given in the November 1917 JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

J. W. ENGLAND,
Secretary.

415 N. 33RD STREET.

COMMITTEE REPORTS

THE DRUG MARKET OF 1917.*

BY HARRY B. FRENCH.

We are repeating the opening clause of our report for the drug market in 1916. We would say that the conditions governing business in 1917 were very much the same as those in 1916, only more so. Conditions have become more complicated because of the increasing difficulty of securing shipments. It is true that freight space is obtainable for shipment from abroad, while it is practically unobtainable for shipments from this country. It is necessary, however, to obtain a license for every shipment from abroad, as well as for all goods exported from this country. Owing to the disturbed conditions in Russia, the products of that country come forward very irregularly. Shipments from the Far East are difficult to make. When the goods are obtainable, shipments can be made from Italy, France and England, in vessels arriving in those countries with full cargoes from the United States.

The increasing demand in all countries for Government requirements and the increasing demand upon man-power, increases the difficulty of cultivating and gathering crude drugs. In a number of important items, the Government demands are so large that it practically absorbs the whole product. Many of these products are now licensed. In the case, for instance, of Acetic Acid, it is impossible to obtain this acid for resale, although moderate supplies can be obtained for use in manufacturing medicinal products.

The difficulties confronting distributors are becoming increasingly difficult. A very large proportion of their employees are of the floating variety and among these, we are sorry to say, there is a very insufficient sense of personal responsibility. Employers accept applicants without asking for references and almost without asking for qualifications and hesitate to discharge them even for serious causes. The distributor, therefore, is faced with the problem of greatly increased distribution with decreased efficiency in his working force. The cost of doing business has enormously increased and is still increasing. This is made up not only of the increased cost of labor but of everything that enters into business transactions—rates for money are very much higher, the cost of packing boxes, barrels, twine, excelsior, cartage and other numerous items that enter into that of doing business has been greatly increased. Conditions are such that it is not so much now a matter of price as of being able to furnish the goods and of packing them and shipping them. It must be, moreover, borne in mind that the price of a very considerable portion of the goods distributed by wholesale druggists is fixed and the profit has not increased with the increased cost of doing business. It is the opinion of the writer that the increased cost of doing business during the present year will be found to have a more important bearing on profits than in any previous year of the war; this will be found to be an increasingly important factor, if this terrible war is prolonged. It is certain that no wholesale house in the United States is making such profits as would class it among those who are designated as "profiteers."

It is very important that retail druggists should realize these conditions, which also to a large extent directly affect them, so that they may make allowances for the difficulties encountered by the wholesale druggists in filling their orders; and also that they may realize and bear in mind the necessity of charging a profit on the goods that they sell and for the service they render. The dealer who fails to recognize these conditions to charge a larger profit for services and for goods is liable to suffer heavy pecuniary losses, which he may not realize until he closes his account at the end of the year.

Referring to particular articles, we would call your attention to the following:

Acetanilid and Acetphenetidin, through the increased production in this country, have been greatly reduced in price.

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* From Report of Committee on Trade Interests, B. E. Pritchard, *Chairman*, presented to the Pennsylvania Pharmaceutical Association, meeting at Wilkes-Barre, June 1918.

Benzoic Acid.—The Government now strictly limits the quantity of Toluol that can be used and therefore the products of Benzoic Acid will be limited. The price, however, is today very much lower than a year ago. We think it will probably not again reach the figure of $10 to $12 per lb., unless under pressure of temporary necessity.

Citric Acid has advanced considerably and there has been talk of limitations of importations of Citrate of Lime, but the manufacturers in this country seem to have caught up with the demand and will supply the legitimate trade at reasonable prices.

Acid Salicylic and Sodium Salicylate are being produced in larger quantities and sufficient to meet demands.

Acid Tartaric has very largely advanced and it is not liable that lower prices will be seen.

Agar Agar, or Japanese isinglass, is being used in new ways and is much higher in price, owing to the increased cost of importation and because of its larger demand.

Agaric is unobtainable.

Albumen—apparently egg albumen—is being used for new purposes, as it has largely advanced and is very scarce.

Alcohol, Ethyl, is selling on the basis of $5.25 in barrels.

Alcohol, Wood, has been taken under Government control and is selling for $1.15 per gallon in barrels.

Aloin.—The demand is extremely large and the price has advanced correspondingly.

Some of the chief articles of import, like Calumba Root, Areca Nuts, and Kola Nuts, are becoming scarcer and may possibly disappear from the market because of difficulties of obtaining freight room for cheap products.

Arrowroot is extremely scarce, St. Vincent advancing from about 6 c. to 40 c. lb. in barrels.

Arsenic has been taken under Government control. At one time the price was as high as 25 c. lb. in kegs, but is now about 16 c. lb.

Balsam Copaiba remains about 95 c. lb.

Balsam Tolu has become extremely scarce.

Bark, Calisaya was for a time almost unobtainable but supplies are now larger.

Bark, Cascara Sagrada, is about double in price. The output this year is held for high prices.

All American crude drugs will be very much higher.

Bay Rum is selling for about $4.00 per gallon.

Camphor advanced to $1.20 lb. for ounces in pound packages in 100-lb. cases. The Japanese not only control the supplies of crude camphor but apparently are trying to freeze out American manufacturers.

Cantharides, Russian, are in only moderate supply.

Cloves, Zanzibar, in a small way, 65–70 c. lb.

Cocaine, muriate, is constantly advancing. The manufacturers have announced another advance of $1.00 oz., June 12.

Cochineal is almost unobtainable and only at very high prices.

Cacao Butter is showing a firmer tendency.

Opium and its products are somewhat lower, as supplies have been more abundant.

Mercurials are all firm at the prevailing previous high prices.

Coumarin is selling as high as $32.00 lb. This is partially due to a strike that took place in the establishment of the largest production.

Cream of Tartar and *Tartaric Acid* are both very high and firm in price.

Cutch.—The Government has taken over the control of this article and will sell only under certain specifications.

Cuttlefishbone, in a small way, 60–65 c. lb. Supplies are small.

Ergot is getting very scarce. It is quoted in a small way at $1.25 lb.

The tendency towards higher prices is more strongly evidenced in Crude Drugs, while there are conflicting currents affecting the prices of Chemicals.

Gelatin is not manufactured in the summer and for several months we expect small supplies and higher prices.

Glycerin.—There are two different opinions prevailing to-day as to the future course of glycerin—some think it may go down and some that it may go up. The predominating opinion is that it will advance.

Aloes—All kinds are in small supply and very high in price.

Gum Arabic is selling at about two and one-half times the usual price.

Asafetida is extremely high in price, in a small way $2.50 lb.

Gum Tragacanth No. 1, white, ribbon, in a small way, $3.00 lb.

Harlem Oil, domestic, of superior quality, may now be obtained at reasonable prices.

Honey, California, is selling at about four hundred percent over the usual price.

Insect Powder, pure, is in reasonable supply and is obtainable in kegs at 40 c. lb.

Leaves, Belladonna, of excellent quality, are very largely grown in this country. Prices are lower and the situation is very much better.

Leaves, Buchu, are in small supply and the scarcity is apt to continue.

Leaves, Henbane, are in larger supply.

Licorice Root and *Licorice Extract* are in small supply. It is hoped that later the extreme shortage may be relieved by shipments from Spain.

Lycopodium is a Russian product that is in good supply at present.

Magnesium Carbonate is getting scarcer and prices are advancing.

Menthol is firming up, but it must be remembered that Germany, who was one of the largest buyers, is no longer a customer.

Essential Oils are all strong.

Oil, Castor, is worth $4.00 per gal. in 5-gal. cans. Immense quantities of the finest grade of castor oil are required for aeroplanes.

Oil, Cod Liver, will remain high. The Newfoundland variety has practically entirely taken the place of the Norwegian. The price is $1.10 per gallon in barrels.

Olive Oil is almost unobtainable; in a small way, in 1-gal. cans, the asking price is $7.80 per gallon for the first quality of table oil.

Oil, Sassafras, true, is in very small supply and will continue so for several months. The price to-day in a small way is about $2.50.

Quinine Sulphate is obtainable for small supplies. We are informed that reasonable supplies of bark are coming forward, but it is certain that the present high prices will continue and may be advanced. The American manufacturers' price is 75 c. oz. in 100-oz. tins. Outside holders are getting $1.20 per ounce.

Roots.—Some of the roots are unobtainable and many of them are very scarce.

Root, Rhubarb, has advanced from 20 c. to 65 c. lb. in case lots.

Root, Senega, in bales, is worth $1.10 lb.

Saffron, Spanish, $18.00 lb.

Seeds.—Many seeds also are in small supply and very firm in price.

Seed, Canary, in bags 17 c. lb.

Seed, Celery, 42 c. lb.

Seed, Colchicum, $4.00 lb.

Seed, Fennel, large, German, almost out of the market, $1.10 lb.

Seed, Flax, in bbls., 11 c. lb.

Seed, Foenugreek, ground, in barrels, 17 c. lb.

Seed, Quince, in a small way, $1.50 lb.

Seed, Sunflower, domestic, in a small way, 10 to 12 c. lb.

Soap, Castile, Conti's, out of the market.

Sugar, Milk, in barrels, 55 c. lb.

Tar, Barbadoes, unobtainable.

Notwithstanding the high prices, it is a matter of great importance that all dealers should carry in stock a reasonable supply of crude drugs and other products for which there is a steady demand. Those who have the courage and the foresight to do this will find that they can charge a price that will bring them in a reasonable profit.

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* Deceased November 19, 1917.
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MONDAY.

9.30 A.M. National Association Boards of Pharmacy.

2.00 P.M. National Association Boards of Pharmacy.
American Conference of Pharmaceutical Faculties.

8.00 P.M. National Association Boards of Pharmacy.
American Conference of Pharmaceutical Faculties.

TUESDAY.

9.30 A.M. National Association Boards of Pharmacy.
American Conference of Pharmaceutical Faculties.

2.00 P.M. Joint Session of National Association Boards of Pharmacy and American Conference of Pharmaceutical Faculties.

7.00 P.M. Council Meeting.

8.00 P.M. First General Session of Association.

WEDNESDAY.

9.30 A.M. Scientific Section, first session.
Section on Education and Legislation, first session.
Women's Section, first session.

12.30 P.M. Alumni Luncheons.

2.00 P.M. Commercial Section, first session.
Section on Practical Pharmacy and Dispensing, first session.

4.30 P.M. House of Delegates.

7.00 P.M. Council Meeting.

8.30 P.M. President's Reception.

THURSDAY.

9.30 A.M. Section on Education and Legislation, second session.
Commercial Section, second session.
Historical Section, first session.

2.00 P.M. Section on Practical Pharmacy and Dispensing, second session.
Scientific Section, second session.
Women's Section, second session.

5.00 P.M. Council Meeting.

7.30 P.M. Illustrated Lecture on "The Indications of Medicinal and Poisonous Properties in Plants," by H. H. Rusby.

8.15 P.M. Second General Session of Association.

FRIDAY.

9.30 A.M. Scientific Section, third session.
Section on Practical Pharmacy and Dispensing, third session.
Joint Session National Association of Boards of Pharmacy.
American Conference of Pharmaceutical Faculties, and the Section on Education and Legislation.

2.00 P.M. House of Delegates.

4.00 P.M. Entertainment.

SATURDAY.

9.00 A.M. Council Meeting.

10.00 A.M. Final General Session of Association.

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QUININE AND WARBURG'S TINCTURE IN MALARIA.

Complex formulas of medicinal preparations are oftentimes criticized for the chief reason, that they contain a number of constituents. Frequently the criticism is justified, but certainly not always, for after all in the practice of medicine, as Doctor Robinson has tersely stated: Science, so-called and merely temporary, must give way to experience, based upon long and careful bedside observation of the wise practitioner.

Replying to a communication of Dr. H. Rabinowitch, published in the *Medical Record* of June 8, 1918, Beverly Robinson, M.D., of New York, writes in a succeeding issue of the same publication: "Of course, I am familiar with the fact that Warburg's tincture contains a proportion of quinine. Nor do I doubt that some of its remedial effects are due to the presence of this alkaloid. On the other hand, I also know and affirm again that in not a few instances quinine in similar or much larger quantity is wholly inadequate to effect a cure of malaria. Warburg's tincture in these instances effects the cure. Why, I cannot precisely say, nor can anyone else. It contains numerous drugs, and among them there may be some that are inert. It still remains true that the multiple combination does what nothing else known up to the present time effects in some most obstinate and imminently threatening cases. That we know, as shown by repeated proofs and the published records of some of the best clinicians of former days.

"*Ars longa, vita brevis.* The greatest rôle of the physician is to cure and to relieve symptoms. Science, so-called and merely temporary, must give way to experience, based upon long and careful bedside observation of the wise practitioner. Only a few days ago the distinguished Surgeon-General of our Army insisted in an address before the University and Bellevue Hospital Medical College upon the great value of the all-round doctor with our army at the front as compared with the specialist whose importance has a relatively limited field of work in time of greatest stress. I wish, particularly, at the present time, to insist that useful knowledge of our great forebears in medicine shall not be practically ignored. For this reason I wrote a strong word for Warburg's tincture in the treatment of malaria. In more than one of our latest and best works on the practice of medicine it is scarcely referred to."

OIL CHENOPODIUM.

Oil of chenopodium is an unusually valuable anthelmintic, and it is employed quite extensively in the treatment of hookworm disease.

An investigation, on the composition of the oil and the anthelmintic value of some of its components, by Maurice C. Hall and Herbert C. Hamilton, is reported in *The Journal of Pharmacology and Experimental Therapeutics* for April 1918, pp. 231–261. Reference is made to *Schimmel and Company's Semi-Annual Report,* April 1908, wherein it is stated that ascaridol (which apparently corresponds to the heavier fraction of oil of chenopodium) is the part responsible for the therapeutic activity of the drug, a statement which has generally been accepted. The authors' conclusions, from their extended experiments are, that the lighter portion of the oil is more anthelmintic and much less irritating. They make the further statement that, if clinical data confirm their experiments, the use of the refined product would be distinctly indicated, notwithstanding such expense. The experiments would prove that the gastro-intestinal irritation induced by administration of the oil is due to that portion remaining after distillation at temperatures below 125° C. with a pressure equal to 30 mm. of mercury, or at equivalent temperatures and pressures.

W. H. Ziegler contributed an article on oil of chenopodium to the *Interstate Medical Journal,* October 1917, wherein he reports that the absorption of the oil is more rapid

from the stomach than from the intestines, and the absorption is delayed when the oil is administered in salol-coated capsules. He also states that atropine antagonizes the depressant effect upon the respiration; the cause of death in the dog when the oil is administered in toxic doses is an acute diffused nephritis; small doses are non-toxic and the toxicity is not influenced by the age of the animal. This author's findings are that the oil of the market does not greatly vary in potency and cites as the principal causes for fatal effects, the failure of the practitioner to differentiate between drops and minims, and of not following therapeutic doses with a purge, either of magnesium sulphate or castor oil.

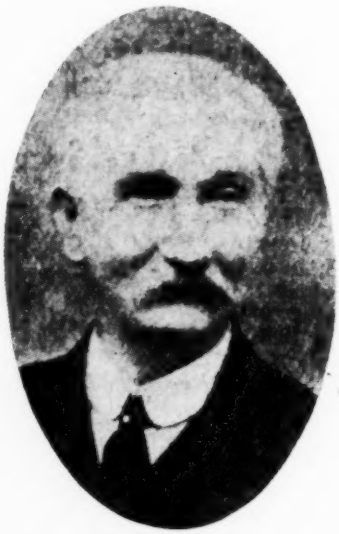
A PHARMACEUTICAL CHEMIST KNIGHTED.

Peter Wyatt Squire, chemist on the establishment of the English Royal Household, has had the dignity of Knighthood conferred upon him. The preferment has not only value

SIR PETER WYATT SQUIRE.

because conferred for merit, but also because it is a signal honor to pharmacy. The honored pharmacist is well and favorably known through his works and contributions to the English pharmaceutical press. Since the outbreak of the war, among other special pharmaceutical war service, one of the most important has been the production by him, in collaboration with Sir Douglas Powell, of the foot ointment used with so much success for the prevention of frost-bite in the trenches.

Sir Peter Wyatt Squire was a student and prize-winner in the British Pharmaceutical Society School in 1864. He served as member of the Council of the Society from 1879–1885. He read a paper on the standardization of drugs before the International Congress of Chemistry in 1909. His work best known to American pharmacists is "Squire's Companion to the Pharmacopoeia," inaugurated by his father, the later Peter Squire, president of the British Pharmaceutical Society, 1861–1863.



W. L. CURRIE.

New President, Pharmaceutical Society, Great Britain.

JAPAN HONORS A PHARMACIST.

M. Hata, Japanese pharmacist, formerly president of the Army Sanitary Material Warehouse, has been created a major-general, at the head of the Japanese Army sanitary department. Until recently pharmacy has been neglected in Japan, but now in recognizing the value of pharmacy, the country has shown her progressiveness. Dr. Jokichi Takamine, member of the A. Ph. A., at present in Japan, has communicated this information, evidently, because it gave him great pleasure to do so.

MACHINE GUN COMPANY WILL BE MADE UP OF GRADUATES IN PHARMACY.

A machine gun company that has enough money to buy its own guns and own uniforms

is being organized. When formed it will be turned over as a complete unit to the 22nd Engineers, New York Guard.

Already the regiment has a company made up of journalists and advertising experts under command of Capt. F. A. Adams.

E. C. Martindale, Ph.G., doing technical work at Roosevelt Hospital, and a sergeant major of the 3rd Battalion, 22nd Engineers, is recruiting for this ultra-pharmaceutical company. He states $3,200 has been donated by members for machine guns and $1,000 more for uniforms. Other companies in the 22nd are equipped and recruited at the expense of the State.

Members have been secured from the working forces of the following firms: Parke, Davis & Co., Sharp & Dohme, Caswell, Massey Co., E. R. Squibb & Sons, Frederick Stearns & Co., L. K. Liggett Co., A. Bouijois Perfumery Co., Nyal Co., Walter John Fraser, Harriman Laboratory, Roosevelt Hospital, Certified Products Co., and Ricksecker & Weigand.—*N. Y. Commercial.*

ENDOWING CHEMICAL RESEARCH.

The du Ponts have established thirty-three scholarships and eighteen fellowships in chemistry in various colleges and universities. This action complements and supplements the large number of chemists who are employed daily in the laboratories of the various duPont plants and engaged in research. If the example thus set will be followed by others of the large chemical industries the colleges will be benefited, and, in turn, the industries will be protected at their most vital points, that is, in those matters where applied expertness counts and mere mechanical output is at a discount.

In a degree the suggestion is applicable to pharmaceutical enterprises, there is opportunity for research in colleges of pharmacy along various lines, but most of them are not endowed sufficiently to greatly extend this necessary work, unless aided.

AMERICAN SURGEONS ISOLATE TRENCH FEVER GERM.

The United States Medical Corps, under the leadership of Surgeon-General William Gorgas, has succeeded in isolating the germ of trench fever.

The success of the American tests, reported in a cablegram from General Pershing to Secretary of War Baker, was made possible by the voluntary sacrifice of sixty-six American soldiers—all members of noncombatant units of a New England division—who submitted to inoculation with the germ in January. General Pershing's message says all of the men now are either cured or convalescent. These men were from field hospitals and ambulance organizations.

PHARMACISTS BRAVE DEATH.

In a recent news item pharmacists were not specifically named in the headlines but the paragraphs spoke of their courage. The occurrence was during a violent attack when the bandages ran low. Harry W. Jarvis, U. S. N., Philadelphia, chief pharmacists' mate, in response to the Surgeon's call, "we must have bandages," volunteered to make a trip to the rear; he made the trip and returned with the bandages.

German prisoners were carrying in wounded and the intensity of the enemy shrapnel fire was such that three of them were killed at the doorway of the dressing station. Captain Orlando S. Petty, of Philadelphia, an assistant surgeon, was operating in a ditch on the opposite side of the road which was lit up by the flashes from exploding shells.

Finally the surgical dressings caught fire and, unable to work any longer, the doctors were compelled to evacuate the place under a deluge of high explosive shells. Lee J. McDaniel, Newport, R. I., Frank O. Tibbetts, Dorchester, Mass., and Claude Mattingly, Santa Rosa, Calif., pharmacists' mates, and Roy J. Israel, hospital apprentice, Allentown, Pa., were assisting the surgeons. Twenty wounded Americans and thirty wounded Germans were lying at the roadside at the time. The men named removed the entire fifty, carrying them to the nearest point to which the ambulances could come.

The next day McDaniel, who seemed to bear a charmed life, and Marion L. Turner, Pharmacist's mate, Milwaukee, Wis., made five trips through the barrage to reach wounded, bandage the men and bring them out.

George A. Jones, hospital attendant, Brooklyn, N. Y., gave a courageous example of faithfulness, dressing the wounds of his fallen comrades while under machine gun fire. When exhausted he made his way back to the regimental hospital unassisted, refusing aid until all the others had been cared for. Algernon G. Brumblee, pharmacist's mate, Spray, N. C., located a machine gun sniper's pit by offering himself as a target.

Unwounded he returned, signalled the position and had the satisfaction of seeing the first shell send the gun and crew into the sky in the shape of fragments.

Members of the Sixty-fifth sanitary section of the United States army were cited for courage in action recently in a communique signed by Divisional General Targe, commander of the 121st Infantry Division.

"In the heavy battles taking place at the present moment," says the statement, "the American personnel of the S. S. U. 65 has commanded, as in the past, the admiration of the officers and soldiers of the 121st Division.

"Always ready to go forward to the zones most intensely under enemy fire, the Americans expose themselves voluntarily to rescue and bring back our wounded. Worthy sons of their great country, they show the initiative, the audacity, the calm courage of their race.

"In the name of their brothers of the French army, the general commanding the division thanks them and congratulates them."

WOMEN CHEMISTS NEEDED.

The Committee on Public Information, Division on Women's War Work, issues the following:

Women chemists are needed by the Government and also to stabilize the industries by replacing men chemists who have been called into service, according to Capt. Frederick E. Breithut, of the Chemical Service Section of the National Army. This call is so urgent that he has asked the women's committee of the Council of National Defense to coöperate with the Army Medical Department in making a census of all the available women chemists in the country.

ENOUGH DENTISTS NOW IN ARMY TO CARE FOR 5 MILLION MEN.

The following statement is authorized by the War Department from the office of the Surgeon-General:

The dental requirements of an Army of more than 5,000,000 men can now be met by the present force of the Dental Corps of the American Army. Examinations for dental officers have been closed and no further additions will be made to the corps for at least six months.

LIBERTY LOAN INTEREST RATES.

Secretary McAdoo officially corrects a statement appearing in various newspapers that the Fourth Liberty Loan will bear interest at the rate of $4^1/_2$ percent. He states that no thought has been entertained of issuing the bonds of the fourth loan at a higher rate than $4^1/_4$ percent.

It is interesting to recall here the Secretary's appeal in his Third Liberty Loan speeches that the rate of interest for Government loans be stabilized at $4^1/_4$ percent. He said then that as an intelligent people we should make a stand for the financing of our Government during the period of the war at a stabilized rate of interest, naming $4^1/_4$ percent as the proper figure, so that all business and investments might be adjusted on that basis. In his letter to Majority Leader Kitchin he strongly urges stabilizing the rate at $4^1/_4$ percent.

The Secretary of the Treasury has also asserted he did not think that the patriotism of the American people was measured by the rate of interest on a Government bond, and the support the people gave the Third Liberty Loan seems to have justified his belief.

LARD SUBSTITUTE.

An Oregon chemist has completed experiments with hydrogenation of fish oil, which according to reports is acceptable to the U. S. Food Administration. The subject of suitable bases for ointments is an interesting one for pharmacists.

Dr. J. N. Rose of the National Museum of the Smithsonian Institute and a party of other scientists will investigate the opportunities for obtaining cinchona bark in Ecuador, and also other drugs and dye-woods.

Government officials believe that this expedition will be the first of a series into all the South American countries to develop commercial plant possibilities to replace certain products on which the United States has heretofore been dependent upon Germany.

Henry Kendall Mulford of Philadelphia has been honored with the degree of Master of Science by Lafayette College, Easton, Pa. Prof. Edward Hart presented Mr. Mulford to the President of the College. The former referred to Mr. Mulford as one who has led his profession in the field of preventive medicine. "It has been truly said," the speaker

continued, "that the good physician is the great benefactor. How much more a benefactor the man whose work guides and extends the activities of the good physician."

Henry K. Mulford, Jr., has returned from France on a short leave of absence. He has been in the Red Cross Service "Over There."

Clyde L. Eddy, managing editor of the *Druggists Circular* since January 1917 has enlisted in the Army and will go with the Signal Corps as news Photographer. He is now pursuing a preparatory course of study in the U. S. School of Military Cinematography. Mr. Eddy graduated from the California College of Pharmacy in 1912 and was editor of the *Pacific Pharmacist* before engaging with the first named publication. Mr. Eddy has for several years participated actively in A. Ph. A. work.

OBITUARY.

WILLIAM LAWRENCE DEWOODY.

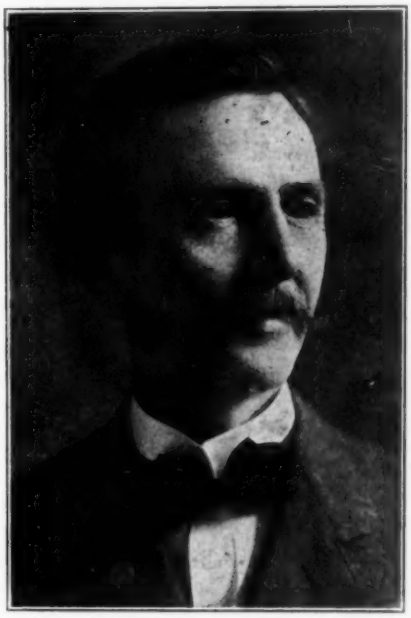
At the Indianapolis meeting of the American Pharmaceutical Association W. L. Dewoody of Pine Bluff, Ark., was elected honorary president. In accepting of the honor Mr. Dewoody said in substance: "I desire that the members understand that my expression of thanks for the honor conferred comes from the heart. I appreciate the privilege of being associated with a body of men whose efforts are for the elevation of pharmacy. My heart has always been with you socially and professionally. I could ask for no greater honor than this and I feel that it is an expression from the hearts of the members of this Association, as a testimonial of my sincerity. I will try to keep the title an honorable one."

Faithful until death, Mr. Dewoody passed away Sunday, June 30, 1918, aged 70 years. The Association sorrows with the bereaved widow and family and extends sympathy in their loss. It is a striking incident that Mrs. W. L. Dewoody, Mrs. Alfred Huested and Mrs. Charles Holzhauer should have constituted the Resolutions Committee of the Women's Section at the Indianapolis meeting.

"While it is a great joy to meet and renew old friendships, it deepens our sorrow and regret that any should be missing," they said.

And these words supply the writer with an expression, for it has been his privilege to associate with the deceased and their good life companions for many years and each year the friendship seemed stronger because we knew each other better. "To the past go more dead faces, Every year; as the loved leave vacant places, Every year;"—

The brief sketch of Mr. Dewoody in the November issue, 1917, of the JOURNAL, was closed with these lines: "His face is turned to the sunset and he rests secure in the love, esteem and confidence of the community at large."



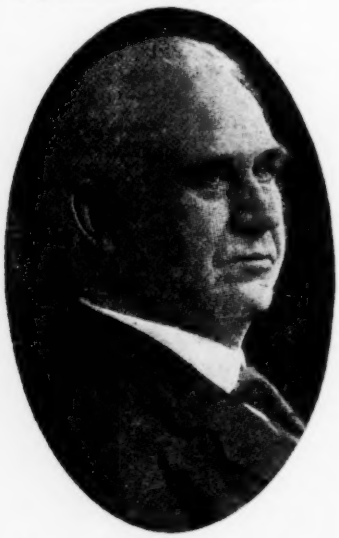
W. L. DEWOODY.
Honorary President A. Ph. A., 1917-1918.

Mr. Dewoody was born in Athens, Ala., December 30, 1848 and came to Pine Bluff, Ark., May 12, 1870, and here he thereafter resided, not only making a success in business affairs but actively interested in the duties of a good citizen. The deceased joined the American Pharmaceutical Association in 1887 and very infrequently missed a meeting thereafter.

Mrs. Dewoody, who usually accompanied her husband to the annual A. Ph. A. meetings, and eight children survive the deceased.

JOHN HARPER LONG.

John Harper Long, professor of chemistry at the Northwestern University died at his home in Evanston, Ill., June 14, after an illness of over six months. Professor Long was born near Steubenville, Ohio, in December 1856. He was graduated from the University of Kansas in 1877, and later studied at Tübingen, Germany, receiving the degree of doctor of science in 1879. He was appointed professor of chemistry in the medical school of Northwestern University in 1881. Professor Long was a member of the referee board of consulting scientific experts of the United States Department of Agriculture.



J. H. LONG.

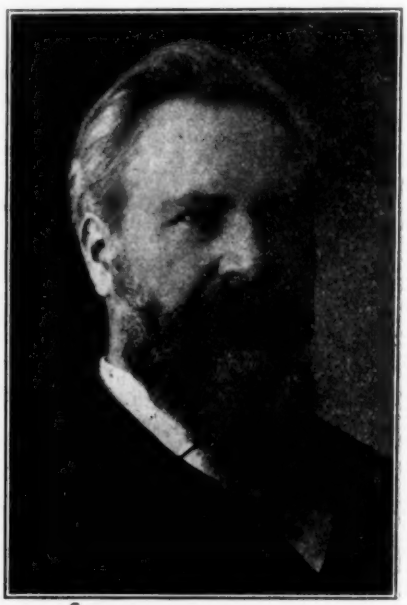
He was a chemist of the state board of health and of the sanitary district of Chicago. He served as president of the American Chemical Society in 1903, of the American Association for the Advancement of Science in 1903 and of the Institute of Medicine of Chicago in 1917. Professor Long was a member of the United States Pharmacopoeia Revision Committee, and from the time of its organization until his death a member of the Council on Pharmacy and Chemistry. He was a member of the American Pharmaceutical Association from 1915–17. During 1913–17 he was dean of the school of pharmacy of Northwestern University.

Professor Long did much chemical research work, particularly in the branches of physiologic chemistry closely related to medicine. As a member of the Council on Pharmacy and Chemistry he not only gave much time to the routine work, but in addition carried out many original investigations.

Professor Long leaves, besides his widow, Catherine S. Long, four sons—Albert, Esmond, Lother, Captain, United States Marine Corps in France, and Byron, Lieutenant, United States Army—and one daughter, Ariel, wife of Lieut. E. P. Miller of Washington, D. C.

GEORGE LEIS.

The life of George Leis was a most eventful one; coming to Kansas in the pioneer days, the family settled in Lawrence when it was a settlement of sod houses, dugouts and tents.



GEORGE LEIS.

One of the founders, University of Kansas, and of the Department of Pharmacy.

He was born in New York City February 18, 1842; in 1854 his parents emigrated to Kansas. The father died two years later and it devolved on the son to assist in the support of his mother and family. These were troublesome times in Kansas, due to raiders and it became necessary for the settlers to defend themselves and rid the country of the undesirables. In this work Mr. Leis participated and when a few years later the war broke out he answered the country's call to service.

During the years from 1857–62 he had clerked in the drug store of Woodward and Finley and studied medicine under Doctors Fuller and Miner. Returning to Lawrence, after the close of the war, he engaged in the

drug business and this small beginning developed into large proportions and was later incorporated as the Leis Chemical Co.

Mr. Leis was active in many of the enterprises of Lawrence, especially those which had for their object the promotion of the business, educational and social welfare of the city and State. He was a heavy contributor to the first university building and in 1887 he was influential in establishing a Chair of Pharmacy in the State University.

The *Lawrence Journal World* in the opening paragraphs of the sketch relating to the deceased says: "George Leis died Saturday, May 25. He was one of the most prominent business men of Lawrence. His passing away is an event in the history not only of the city of Lawrence but of the state of Kansas, for his whole life was devoted to the building up of the state.

"George Leis was one of the clear visioned pioneers who saw and worked for the future prosperity of Kansas even while he endured the trials of the early days—trials such as this part of the country will never again know. He lived through the early day famines caused by drought and pests, the destructive raids of the Border Ruffian war and Civil war and the financial crises that brought ruin to so many of the old business men."

Mr. Leis is survived by his wife, Lillian R. Leis, and six children, Kathryn Leis Davies, Zoe Leis, Edmund R. Leis, George K. Leis, Tracy F. Leis and S. Frank Leis.

The deceased joined the American Pharmaceutical Association in 1869.

SOCIETIES AND COLLEGES.

THE CHICAGO MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The Chairmen of the different Sections of the A. Ph. A. report progress but at this writing are not ready to submit programs. The list of Section officers was printed in the June issue of the JOURNAL, page 569, and will be convenient for those who have papers in preparation.

Chairman C. B. Jordan reports the following papers for the Section on Education and Legislation:

"Is Research Work along Lines Suggested by the Last Revision of the U. S. P. Possible and Practical in Schools of Pharmacy?"—C. S. Chase.

"What is the Meaning of a Degree in Pharmacy?"—L. E. Sayre.

"Coöperation between State Medical and Pharmaceutical Boards. Joint Control over the Preparation, Distribution, Purity Sales of Drugs."—F. E. Stewart.

"Is the Exclusive Ownership and Use of Coined Names for Chemicals, Drugs, and Their Preparations Objectionable and Should It Be Subject to Limitations and Restrictions?"—F. E. Stewart.

"What Should Be the Attitude of the Profession toward Further Restriction in the Sale and Use of Alcohol?"—Herbert W. Emerson.

"Publication of Potent Drug Content in All Ready-Made Medicine. Is it Desirable?"—Oscar Dowling.

"Instruction of Pharmacists for War."—Caswell A. Mayo.

"Health Insurance Legislation."—J. H. Beal.

"Plant Chemistry."—Nellie Wakeman.

Secretary Hugo Kantrowitz reports that Edward Kremers, William B. Day, F. W. Nitardy, Frederick J. Wulling and W. W. Figgis have promised papers. And also the acceptance of the following:

"The Etymological Derivations of the Word 'Drug.'"—W. O. Richtman.

"The History of Arsenical Preparations."—H. A. Langenhan.

Reports indicate a very good attendance for the Chicago meeting.

AMERICAN MEDICAL ASSOCIATION MEETING.

The sixty-ninth annual meeting of the American Medical Association was held in Chicago during the week of June 10. Certainly this meeting was the most important convention ever held by any organization in this country. It would be idle attempt to even briefly summarize the transactions; however, we reproduce the closing paragraph of a retrospect in the *Journal of the A. M. A.*:

"The attendance at this session was the largest since the Chicago session of 1908. The total, 5,553, is but a meager 800 less than that of the 1908 session, and when one takes into consideration the fact that about 20,000 physicians are in active military service, that the services of many physicians are con-

tinuously needed by civilian communities and industrial institutions, and that railroad rates are comparatively higher than they have ever before been in the history of our country, the attendance at this session may well be said to have been phenomenal. No meeting of the Association has so successfully reached the public as did this sixty-ninth annual session, and the public showed its interest in the session and in the work which the medical profession is trying to accomplish, by attending in large numbers every meeting in which arrangements had been made for it."

MAJOR ALEXANDER LAMBERT, M. R. C., U. S. ARMY.

President-elect of the American Medical Association.

The Committee on Scientific Research has been reëstablished and as newly constituted consists of: Dr. Ludvig Hektoen, Professor of Pathology at Rush Medical College, Chicago; Dr. G. N. Stewart, Professor of Experimental Medicine, Western Reserve University, Cleveland; Dr. A. W. Hewlett, Professor of Medicine, Leland Stanford Jr. University, Berkeley, Calif.; Col. F. F. Russell, Surgeon-General's Office, Washington, D. C.; J. W. Churchman, Professor of Surgery, Yale University, New Haven, Conn.; and Herbert Charles Moffit, Dean and Professor of Medicine, University of California Medical School.

NATIONAL PHARMACEUTICAL SERVICE ASSOCIATION ELECTS OFFICERS.

The June meeting of the National Pharmaceutical Service Association, which was also the annual meeting of that body, was held at the Philadelphia College of Pharmacy, June 11th.

The chief features of the meeting were the reports of the officers. President Beringer reviewed the efforts of the Association in the drafting of the Edmonds Bill and having it introduced, and made a plea for greater coöperation on the part of pharmaceutical bodies generally, in making the movement for the Pharmaceutical Corps a success.

Secretary Robt. P. Fischelis reviewed the propaganda work that had been carried on during the year and announced that the membership now totaled about 1400. He earnestly requested the Association to relieve him from the duties of the secretaryship because of pressure of business and other association work.

All of the officers were given a vote of thanks for their efforts during the year and the following were elected to serve for the term of 1918–19:

President, George M. Beringer; *Vice-President*, Charles H. LaWall; *Secretary*, E. Fullerton Cook; *Treasurer*, Josiah C. Peacock; *Executive Committee*, Joseph W. England, Philadelphia; C. A. Mayo, New York; Eugene G. Eberle, Philadelphia; Samuel C. Henry, Chicago; Louis Werner, Cincinnati; Ambrose Hunsberger, Philadelphia; Robert P. Fischelis, Philadelphia; F. E. Stewart, Philadelphia; William D. Robinson, Philadelphia.

Communications regarding the work of the Association and applications for membership should be addressed to Prof. E. Fullerton Cook, Secretary, at 145 North Tenth Street, Philadelphia.

STATE PHARMACEUTICAL ASSOCIATION MEETINGS.

The State Associations so far convened report larger attendances than expected. This is highly gratifying and proves an awakening interest, for it must be admitted that the item of help seriously interferes with vacation days for proprietors. The associations have endorsed the Edmonds Bill and also passed favorable resolutions, and now contemplate a campaign among citizens in behalf of such

provision in the U. S. Army. Legislative matters and tax measures were freely discussed, and there is no doubt relative to the opportunities afforded. The plans for federating the drug industries received attention in nearly all of these organizations. A general conference to discuss the plans will be held in Chicago, August 10.

STATE PHARMACEUTICAL ASSOCIATION.

OFFICERS FOR 1918–1919.

ILLINOIS.

President, Frank J. Dubsky, Chicago.
First Vice-President, John C. Wheatcroft, Grayville.
Second Vice-President, W. J. Clancy, LaSalle.
Third Vice-President, Ad Umenhofer, Chicago.
Secretary, W. B. Day, Chicago.
Treasurer, Chris Garver, Bloomington.
Peoria was selected for the next place of meeting, June 17–20, 1919.

KENTUCKY.

President, R. S. Berrymann, Versailles.
First Vice-President, W. J. Wilson, Mayfield.
Second Vice-President, Charles Laudier, Ashland.
Third Vice-President, T. J. Brockman, Fredonia.
Secretary, J. W. Gayle, Frankfort.
Treasurer, Vernon Driskell, Carrollton.
Place for next meeting not selected.

KANSAS.

President, W. E. Sheriff, Ellsworth.
Vice-President, J. A. Searcy, Leavenworth.
Secretary, D. F. Deem, Stark.
Treasurer, John Schmitter, Gypsum.

MARYLAND.

President, W. H. Clarke, Pocomoke City.
First Vice-President, D. R. Millard, Baltimore.
Second Vice-President, G. E. Pearse, Frostburg.
Third Vice-President, R. E. L. Williamson, Baltimore.
Secretary, E. F. Kelly, Baltimore.
Treasurer, Samuel Y. Harris, Baltimore.
Executive Committee, C. C. Neal, Baltimore; E. W. Hodson, Baltimore; G. A. Bunting, Baltimore; C. R. Holtzman, Cumberland; H. W. Eakle, Hagerstown.

MISSOURI.

President, Minnie M. Whitney, Kansas City.
First Vice-President, A. C. Smith, Carrollton.
Second Vice-President, C. H. McDonald, Rocky Comfort.
Third Vice-President, W. R. Scheldrup, Pierce City.
Secretary, H. M. Whelpley, St. Louis.
Treasurer, Wm. Mittelbach, Boonville.
Assistant Secretary, C. E. Zinn, Kansas City.
Council, H. D. Llewellyn.
Chairman, A. M. Howard.
Vice-Chairman, D. V. Whitney.
Secretary, Otto F. Claus, St. Louis; W. E. Bard, Sedalia.

NEBRASKA.

President, J. Earle Harper, Spencer.
First Vice-President, Tresa St. Martin, Wahoo.
Second Vice-President, J. W. Bushnell.
Third Vice-President, Miss Elsie Day, Lincoln.
Fourth Vice-President, A. E. Carlson, Dannebrog.
Fifth Vice-President, Neil Dodge, Hickman.
Secretary, J. G. McBride, University Place.
Treasurer, D. D. Adams, Nehawko.

NORTH CAROLINA.

President, S. E. Welfare, Winston-Salem.
Vice-Presidents, G. R. Pilkington, Pittsboro; E. E. Missildine, Tryon; I. W. Rose, Rocky Mount.
Secretary-Treasurer, J. G. Beard, Chapel Hill.
Member Board of Pharmacy, F. W. Hancock, Oxford.
Local Secretary, R. R. Bellamy, Wilmington.
Wilmington was selected as the next meeting place.

OFFICERS NATIONAL DRUG CLERKS ASSOCIATION 1918–1919.

President Henry J. Steining, Lafayette, Ind.
First Vice-President, Frederick J. Killalee, St. Louis, Mo.
Second Vice-President, James K. Wunsch, Chicago, Ill.
Third Vice-President, Marvin E. Pate, Madisonville, Ky.
Secretary-Treasurer, P. A. Mandabach, Chicago, Ill.
Councilor-at-Law, R. A. Cavanagh, Chicago, Ill.
Consulting Attorney, Cline C. Brosius, Chicago, Ill.
Corresponding attorneys in every state of the Union. Paul J. Mandabach, National Editor and Director of Publicity.

THE PHARMACIST AND THE LAW.

WAR EXCISE TAXES.

Attention is called to the following articles because they may be overlooked in rendering taxes.

ART. XIX. *Medicinal preparations.*—The tax is 2 percent of the price for which pills, tablets, powders, tinctures, troches or lozenges, sirups, medicinal cordials or bitters, anodynes, tonics, plasters, liniments, salves, ointments, pastes, drops, waters, essences, spirits, oils, and all medicinal preparations, compounds or compositions whatsoever, are sold by the manufacturer; provided that

(1) The manufacturer claims to have any private formula, secret or occult art for making or preparing them; or

(2) The manufacturer has or claims to have any exclusive right or title to making or preparing them; or

(3) They are prepared, uttered, vended, or exposed for sale under any letters patent or trade-mark; or

(4) They are held out or recommended to the public by the makers, venders, or proprietors thereof, either (*a*) as proprietary medicines or medicinal proprietary articles or preparations, or (*b*) as remedies or specifics for any disease or affection whatever affecting the human or animal body.

ART. XX. *Medicinal preparations: Scope of tax.*—Every medicinal preparation, compound, or composition which is embraced within one or more of subdivisions (1), (2), (3) and (4) in the preceding article is subject to the tax. If, for instance, an article is made or prepared by a manufacturer claiming to have a private formula, secret or occult art for it, it is taxable, even though it is not prepared, uttered, vended, or exposed for sale under any letters patent or trade-mark, and it is not held out or recommended to the public as a proprietary medicine or medicinal proprietary article or preparation, or as a remedy or specific for any disease or affection of the human or animal body. Preparations made in accordance with formulas contained in the United States Pharmacopoeia and National Formulary by pharmaceutical manufacturers, when not held out or recommended as proprietary medicines or medicinal proprietary articles or preparations, or as remedies or specifics, are not subject to the tax; but if so held out or recommended they are taxable, although not identified by any name, trade-mark, or otherwise.

ART. XXI. *Medicinal preparations: Who is a "manufacturer?"*—Within the meaning of this subdivision a manufacturer or producer is a person who prepares an article or has it prepared and sells it, and who identifies the article by a commercial name, trade-mark, or trade name, or by other means, or holds out or recommends the article as a proprietary medicine or medicinal proprietary article or preparation, or as a remedy or specific. If the article or its container has on it both a trade-mark or trade name of one manufacturer and the individual or business name of another, the owner of the trade-mark or trade name will be deemed the manufacturer. If the article or its container has on it both the commercial name of the article and an individual or business name, the latter will be deemed to designate the manufacturer. A person who is employed to make an article and receives for it the cost of materials and labor, plus a specified profit, shall be considered a manufacturing agent, and the person who procures the preparation of the article will be considered the manufacturer. Where the owner of a formula contracts with a manufacturer to prepare an article according to such formula and to deliver it to him in complete, salable form, the labels bearing the formula owner's name, he is considered the manufacturer. A person who bottles or otherwise prepares an article, and merely for advertising purposes places on such article the name of any dealer who may handle it, shall be deemed the manufacturer if the names of both persons appear, but if only the dealer's name appears he shall be deemed the manufacturer. "Held out or recommended" includes representation by any means, personal canvas and statements on the labels, in pamphlets and in advertisements, or otherwise. A holding out or recommendation intended for physicians only is a holding out to the public.

ART. XXII. *Medicinal preparations: Articles included.*—The word "medicinal" is applicable to any substance adapted to cure or alleviate disease or pain. Accordingly, a medicinal preparation is a preparation of any substance whatever intended to be applied for the cure or mitigation of pain or disease. Many articles or substances which are not usually considered as belonging to materia medica may become taxable medicinal preparations by being held out or advertised as remedies for diseases affecting the human or

animal body. Boric acid when sold under a trade-mark as a medicinal preparation is taxable.

ART. XXVI. *Return of tax on commodities.*—Each manufacturer of any of the articles hereinabove enumerated must make monthly returns under oath in duplicate and pay the taxes imposed on such articles to the collector of internal revenue for the district in which his principal place of business is located. The returns shall be made on Form 728. Instructions for preparing will be found on the back of the form. The returns are to be rendered and the tax paid on or before the last day of each month covering the transactions of the preceding month, the first return to cover all transactions since October 3, 1917. Where articles are sold over a period of time under an agreement for a quantity rebate, the tax, if originally computed on the gross price, may be adjusted in the return for the month in which the price is finally determined. Branch houses should in general make reports to the parent house, which is liable to make monthly returns of the sales of the branch house. An itinerant manufacturer should make return and pay the tax to the collector of the district where the sales are made. The books of every person liable to the tax shall be open at all times for inspection by examining internal revenue officers.

CHANGES OF ADDRESS.

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of the change of address is received before shipment or mailing.

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CHANGES OF ADDRESS SINCE APRIL 23, 1918.

TWOMBLY, A. P. W.
From 721 Huntington Ave., Boston, Mass.
To Box 94, N. Rochester, New Hampshire.

McGOGY, J. F.
From 6219 12th Ave., N. E., Seattle, Washington.
To 1015 E. 55th St., Seattle, Washington.

GROSS, E. O.
From Albia, Iowa, care G. D. Miller.
To Elma, Iowa.

KING, G. A. N.
From Twin City Drug Mills, Minneapolis, Minnesota.
To 2631 Emerson South, Minneapolis, Minnesota.

MERNER, P. M. P.
From Cedar Falls, Iowa.
To 89 Auburn Ave., Sierra Madre, Cal.

BOTKIN, R. J.
From Residence unknown.
To 138 W. 31st, Bayonne, New Jersey.

BERGER, E. R.
From Residence unknown.
To Odebolt, Iowa.

ELLIOTT, C. S.
From Residence unknown.
To Base Hospital, Camp Grant, Rockford, Illinois.

BRACONIER, F. G.
From 1145 Main St., Campello, Massachusetts.
To U. S. S. Wilhelmina, Brooklyn, New York.

MOORE, M. S.
From 308 W. Chestnut St., Albion, Michigan.
To 320 W. Lapeer St., Lansing, Michigan.

STOUT, M. A.
From Peoples Gas Bldg., No. 1213, Chicago, Ill.
To Bluffton, Indiana.

HOFFMAN, E. S.
From 138 Linden St., Allentown, Pennsylvania.
To 3238 Chestnut St., Philadelphia, Pennsylvania.

GEIMER, F. W.
From 5 Salem St., Newark, New Jersey.
To Maplewood, New Jersey.

BECKER, M.
From Wyne Hotel, Denver, Colorado.
To 2214 E. 35th, Kansas City, Missouri.

COUSSENS, B. P.
From 5125 Von Verson Ave., St. Louis, Mo.
To 5847 Delmar Ave., St. Louis, Mo.

REINER, N. T.
From 1 Westminster Pl., Providence, Rhode Island.
To 25 Westminster Pl., Box 1286, Providence, Rhode Island.

Winski, F. B.
From 1637 Warren Ave., Chicago, Illinois.
To 34 Woodland Pl., Stamford, Connecticut.

HENRY, S. C.
From 122 S. Michigan Ave., Chicago, Ill.
To 168 N. Michigan Ave., Chicago, Illinois.

HELFMAN, JOS.
From Parke, Davis Co., Detroit, Michigan.
To Hotel Vista del Arroyo, Pasadena, Cal.

HUMMA, H. H.
From 2431 S. Dearborn St., Chicago, Ill.
To Metropolis, Illinois.

ROON, LEO.
From Elmhurst, Long Island, New York.
To 23 Vine St., c/o E. R. Squibb & Sons, Brooklyn, New York.

BEACH, D. C.
From 87 Columbia Hts., Brooklyn, New York.
To 570 Jefferson Ave., Brooklyn, New York.

MCDIARMID, D. P.
From 371 East St., Talladega, Alabama.
To 1430½ 11th Ave., S., Birmingham, Alabama.

ZELUFF, I. S.
From 743 Ocean View Ave., Woodhaven, Long Island, N. Y.
To Farmers Ave., Hollis, Long Island.

HILTERBRAND, E. A.
From 1014 W. 18th St., Oklahoma City, Okla.
To 4011 Colonial Ave., Dallas, Texas.

PRT. NORTH, H. H.
From Medical Dept. Exam. Bldg., Ft. Slocum, New York.
To U. S. A. General Hospital, No. 7, Roland Park, Baltimore, Maryland.

RESIDENCE UNKNOWN.

COOLBAUGH, L. E.
From Old Corner Drug Store, Waco, Texas.
To Residence unknown.

ALLANDE, A. J.
From Hammond, La.
To Residence unknown.

STEWART, H. E.
From Jacksonville, Fla.
To Residence unknown.

HERRON, CHAS. S.
From 141 N. 15th St., Philadelphia, Pa.
To Residence unknown.

DECEASED.

FACK, RUDOLPH
1626 Sycamore St., Cincinnati, Ohio.

JACKMAN, W. F.
Detroit, Michigan.

UNITED STATES PUBLIC HEALTH SERVICE.

List of Changes of Duties and Stations of Commissioned and Other Officers of the United States Public Health Service for the days ended June 12, 1918.

Pharmacist J. A. Wolfe. Relieved at the Marine Hospital, Stapleton, New York. Proceed to Washington, D C., for temporary duty. June 1, 1918.

Sanitary Engr. H. R. Crohurst. Proceed to Wichita Falls, Texas, for conference regarding water supply at the Aviation Camp. June 3, 1918.

Sanitary Engr. H. W. Streeter. Proceed to Portsmouth, N. H., for consideration of plans for securing a safe water supply for that city. June 1, 1918.

Prof. C. W. Stiles. Proceed to necessary points in the State of Georgia for conference regarding venereal disease control. May 20, 1918.

Pharmacist F. L. Brown. Proceed to Baltimore Quarantine Station for temporary duty. On completion of duty rejoin station at Philadelphia, Pa. May 29, 1918.

Pharmacologist Julius Stieglitz. Proceed to New York and Philadelphia *via* Washington, for investigation of methods of manufacturing arsphenamine. May 23, 1918.

Pharmacist T. V. O'Gorman. Relieved at Marine Hospital, Port Townsend, Wash. Report at Quarantine Station for duty. June 4, 1918.

Bacteriologist Nathan Berman. Proceed to Chattanooga, Tenn., for duty in connection with sanitation of extra-cantonment areas. June 7, 1918.

Bacteriologist E. D. Reynolds. Relieved at Macon, Ga. Proceed to Greenville, S. C., on special temporary duty. June 11, 1918.

Scientific Asst. W. H. Price. Proceed to Little Rock, Ark., on temporary duty. June 10, 1918.

Sanitary Inspector E. J. McLaughlin. Relieved at Petersburg, Va. Proceed to Englewood, N. J., on special temporary duty. June 11, 1918.

Sanitary Inspector W. F. Purrington. Relieved at Spartanburg, S. C. Proceed to Porthsmouth, N. H., on special temporary duty. June 11, 1918.

PROMOTIONS.

Pharmacist John H. Hayes. Promoted and appointed a Pharmacist of the Second Class, effective March 18, 1918. May 23, 1918.

BOOK NOTICES AND REVIEWS.

Annual Reports of the Chemical Laboratory of the American Medical Association for 1917. Paper. Price, postpaid, 25 cents. Pp. 140. Chicago: American Medical Association, 1918.

This, the tenth volume of the Reports of the A. M. A. Chemical Laboratory, presents the portions of the Laboratory's work carried out during 1917 which it was thought would be of interest to those concerned with the analysis of drugs. Like the preceding volumes it gives not only the results of the examination of many proprietary preparations but also the methods of analysis employed. The latter feature makes the publication most helpful to drug analysts, pharmacists and others interested in pharmaceutical chemistry.

The following is a list of the subjects treated: Note on the Determination of Boric Acid by Titration in the Presence of Glycerol; Some Color Reactions Obtained from the Extract of *Acer Spicatum* (False Viburnum Opulus, Viburnum Opulus U. S. P. VIII); Wheeler's Tissue Phosphates; "Ambrine" and Paraffin Films; The Stability of Iodine Ointments; The J. B. L. Cascade Treatment; Brom-I-Phos; Low's Worm Syrup; Dr. Pierce's Anuric Tablets; Ziratol; "Haines Golden Treatment;" Venosal; Surgodine; Commercial Pelletierine Tannate; "Byron Barber's Pneumonia Specific;" Standards for Beta-naphthyl Benzoate; Elixir Novo-Rexamine (Upsher Smith); "Freeze-Proof;" Dr. Hand's Worm Elixir for Children; Iodeol and Iodagol; Iodolene and the Solubility of Iodin in Liquid Petrolatum; Kar-Ru; Magnesium Acid Citrate-"Citrssia;" Mineral Salts and Stuart's Calcium Wafer Compound.

This volume very appropriately also contains a collective index to the ten volumes so far issued. The index gives not only the titles of the many preparations and compounds examined since the organization of the Laboratory but also a key to the methods of determining the constituents of the preparations analyzed. Thus, a reference in the index states how boric acid was determined in the following preparations: Alcola, Berledets, Collyriun Wyeth, Crystos, Kora-Konia, Micajah's Uterine Wafers, Mrs. Price's Canning Compound, O-Do-Cure, Oxychlorine and Zyme-Oid. This feature should be of much help to analysts called on to examine complex drug preparations.

PUBLICATIONS RECEIVED.

The Supplement to the United States Naval Medical Bulletin, April 1918, published for the information of The Hospital Corps of the Navy.—Issued by The Bureau of Medicine and Surgery, Navy Department. Division of Publications, Medical Inspector J. S. Taylor, United States Navy, in charge. Edited by Past Assistant Surgeon G. F. Cottle, United States Navy.

Sixteenth Annual Report of the Board of Pharmacy of the State of New Jersey.—October 31, 1917.

Directory of Registered Pharmacists and Registered Assistant Pharmacists of the State of New Jersey.—Also containing the Pharmacy Law of the State and the Rules of the Board for its Enforcement. Issued September 1917, by the New Jersey Board of Pharmacy.

In Memoriam, Prof. Joseph Price Remington, being a reprint from the *American Journal of Pharmacy*, February 1918. The booklet is neatly printed and the frontispiece exceptionally good, and of a photograph that presents a speaking likeness of this honored pharmacist as he appeared among us several years ago.

University Bulletin University of Michigan. —*College of Pharmacy Bulletin* of the Philadelphia—College of Pharmacy and Alumni report.

Supplement to Bulletin Buffalo College of Pharmacy.

JOURNAL ANNOUNCEMENTS.

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* Deceased November 19, 1917.
‡ Deceased June 30, 1918.